

**THE IMPACT OF AFFORDABLE LOSS ON BUSINESS MODEL INNOVATION
AMONGST SOUTH AFRICAN ENTREPRENEURS**

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University of Pretoria, in partial fulfilment of the requirements for the degree of
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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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ABSTRACT

Entrepreneurs face high levels of uncertainty; this has been amplified the globally uncertainties and events such as the COVID-19 pandemic. The South Africa economy is dependent on the flourishing of the entrepreneurship to create jobs and add to the economy.

In recent years, the study of Business model innovation (BMI) has gained the attention of researcher and businesses. Literature has largely linked BMI to improved firm performance and this is evident given the likes of businesses that have seen great success with BMI such as Airbnb, Alibaba and Uber. Literature has found that effectuation has a positive impact on BMI. The affordable loss principle of effectuation deals with uncertainty. The study therefore sought to empirically test the relationship between AL and BMI amongst South African (SA) entrepreneurs.

The study collected data from 127 entrepreneurs in SA who own a business. The study conducted Pearson's correlation analysis to test the relationship between AL and the formative subconstructs of BMI. The results of the hypotheses were not supported, therefore concluding that AL does not have an impact on BMI for SA entrepreneurs.

KEYWORDS

Business Model Innovation, Affordable Loss, Entrepreneurship.

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ACRONYMS AND ABBREVIATIONS

AL	Affordable loss
BM	Business models
BMI	Business model innovation
CP	Capture Innovation
CR	Creation Innovation
EFA	Exploratory factor analysis
GDP	Gross domestic product
IT	Information technology
KMO	Kaiser-Meyer-Olkin
MAR	Missing at random
MCAR	Missing completely at random
MNAR	Missing not at random
PI	Proposition innovation
POPIA	Protection of personal information act
SA	South Africa
SME	Small and medium enterprises
TTM	The Transtheoretical Model
VUCA	Volatility, uncertainty, complexity, and ambiguity

CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM

1.1 THE PURPOSE OF THE STUDY

The use of the affordable loss (AL) principle can assist entrepreneurs to retain some control when facing uncertainty, by assessing the means they are willing to risk and then making a decision based on it (Wiltbank et al., 2009; Dew et al., 2009).

The high level of uncertainty entrepreneurs faced is described as Knightian uncertainty, this is when the level of uncertainty is so high that no predictions can be made about the future (Sarasvathy & Kotha, 2001). It is therefore important for entrepreneurs to limit their risk in decision-making when faced with Knightian uncertainty, instead of the traditional approach of viewing the potential upside of the opportunity (Sarasvathy, 2001; Sarasvathy & Kotha, 2001).

Dew et al. (2009) argue that the use of the AL principle improves the efficiency of new ventures. AL can be seen as a tool to help promote entrepreneurship in tough and uncertain economies such as South Africa. This is supported by the work of Roach et al., (2016), the study evaluated the impact of AL on firms and found a positive relationship between the corporate entrepreneurs that apply the principle of AL and the firm's performance. Furthermore, Futterer et al. (2018) posit that AL allows an entrepreneur to take more risks which leads to an increase in business model innovation (BMI).

This study seeks to describe and explore the relationship of AL to BMI for entrepreneurs.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

According to GEM (2022), entrepreneurship is the creation of a new business venture. Klonek et al. (2015) used the Transtheoretical Model (TTM) by Prochaska and DiClemente (1982) to describe the five stages of entrepreneurship. The first stage is the pre-contemplation stage; the second stage is the contemplation stage; the third stage is the preparation stage, the fourth stage is the action stage; and the fifth stage is the maintenance stage. The current study, however, will not distinguish between the different stages of entrepreneurship.

Entrepreneurship plays a significant role in South Africa (SA). Entrepreneurs are said to be the lifeblood of the economy. In 2013, small businesses contributed 16%

to the South African gross domestic product (GDP), and their contribution grew to 22% in 2019 (Statistics South Africa, 2020). This highlights the importance of entrepreneurship in developing the economy. The South African government recognises its importance and views entrepreneurship as the key to combatting unemployment and racial and gender inequalities in SA (National Planning Commission, 2010).

However, entrepreneurship is not without its challenges. Entrepreneurs face a myriad of uncertainties on this voyage. As noted by Doheny et al. (2012), we are living in a world full of volatility, uncertainty, complexity, and ambiguity (VUCA), which has made planning and strategising for entrepreneurs a difficult exercise to undertake (Ries, 2010). The risk and uncertainty entrepreneurs face has been highlighted by recent events: the COVID-19 pandemic; the oil price soaring due to the war in Ukraine and the May 2022 global stock market crash (Daniel, 2022). In addition to the global uncertainties, SA has a slow-growing economy which adds to the pressures faced by entrepreneurs. According to McKinsey & Company (2020), the COVID-19 35-day hard lockdown had the biggest impact on sectors of the economy which were the fastest-growing sectors for entrepreneurship in SA. It is, therefore, evident that entrepreneurs face many challenges, and with each challenge lies a choice the entrepreneur needs to make. The entrepreneur's decision-making process is vitally important as these decisions can either lead to the success or failure of the venture they are pursuing.

1.3 RELEVANCE OF THE STUDY

Research in the field of entrepreneurship has been growing, yet there is a strong appeal from researchers to further expand research in this field of study (Kraus et al., 2021). Given the significant role of entrepreneurs in the economy, the uncertainty entrepreneurs face in SA, coupled with the well-studied benefits of BMI on a firm's performance and the findings between AL and firm performance, this study seeks to provide SA entrepreneurs with the knowledge to appropriately address risk and uncertainty when making decisions that will lead to BMI.

1.3.1 Contribution to Academia

BMI has been largely linked to improved firms' performance (Bhatti et al., 2021; Foss & Saebi, 2017). Researchers have also explored the relationships between entrepreneurship models such as causation, bricolage and effectuation with firm

performance. An et al. (2020) showed that the process of effectuation is effective amongst nascent firms, whereas causation is more effective with mature firms. A study done by Snihur and Zott (2020) found that the thinking process of founders and their behaviour influenced a firm BMI in European countries.

The findings of research between effectuation and BMI are incongruent. For instance, Fütterer et al. (2018) found amongst corporate entrepreneurs that were significant relationships between effectuation and three of the four dimensions of BMI: value offering architecture, external value-creation architecture and financial architecture. Internal value-creation architecture was found to not have a significant relationship with effectuation. However, Reymen et al. (2017) found a relationship between two dimensions of effectuation: value propositions and value capture innovation. Added to this are the inconsistent findings on the impact AL (a principle of effectuation) has on BMI, with Roach et al. (2016) finding AL to be positively related to a firm's performance. This contradicts the findings of Smolka et al. (2018) who found a negative relationship between AL and firm performance.

Although there have been vast amounts of research on BMs, the research on the topic of BMI is still underdeveloped, however, the academic interest in BMI has been expanding in recent years (Foss & Saebi, 2017). BMs linkage to entrepreneurship and entrepreneurial models is yet to be fully developed. The need to better understand the relationship between BMI and entrepreneurship is supported by Zhang et al., (2021), Foss and Saebi (2017) and Fütterer et al. (2018). Fütterer et al. (2018) expressed the need for the research to be conducted in countries other than Germany. Snihur and Zott (2020) suggested that more studies be done exploring the behavioural thinking of the founder's influence on BMI in countries outside of Europe.

However, there have been contradictory finds on the impact AL (a principle of effectuation) has on BMI, this can be found when comparing the findings from (Pati et al., 2021; Roach et al., 2016; Smolka et al., 2018). An et al. (2020) expressed the need for research on effectuation to extend from financial performance to innovation performance. Smith (2022) recommends employing the scale he developed to tap AL in several ways for future research. One of those ways is to further investigate the relationship AL has with BMI and which aspects of BMI it may drive.

In summary, there is a clear link between firm performance and BMI, a strong call to research the relationship between entrepreneurial models to BMI and inconsistent findings from research conducted exploring the relationship of AL to BMI. Therefore, the study seeks to advance the research by exploring this relationship.

1.3.2 Contribution to Business

1.3.2.1 The importance of business models and business model innovation for entrepreneurs

To develop a well-established BM, Morris et al. (2005) posits that six key questions must be answered: what is the firm's value proposition?; who are your customers and clients?; what are the firm's internal capabilities and core competencies?; how does the firm differentiate itself from the competition?; what are the firm's revenue models?; and what does the firm aim to achieve in the long term? These questions can be categorised into three dimensions of BMI: value-creation innovation, value proposition innovation and value innovation proposition (Clauss, 2017).

BMI has been a popular topic amongst scholars and entrepreneurs in recent years (Foss & Saebi, 2017). The keen interest in BMI has been spurred on by the success seen in tech start-ups that have innovated their BMs (e.g. Netflix, Uber, Airbnb, Alibaba and Tencent) (Zhang et al., 2021) and have disrupted their industries. In 2009, Christensen and Johnson (2009) found that approximately 74% of firms that entered the Fortune 500 list between 1999 and 2009 did so by innovating their BMs. In addition to this, BMI is viewed as having a link to competitive advantage and above-average firm performance (Chesbrough, 2007; Zhang et al., 2021).

Given the high level of uncertainty entrepreneurs face around the world, entrepreneurs are constantly solving problems that face their businesses (Ries, 2010). This means that new ventures do not have perfect or stable BMs, and therefore have to constantly be changing them to ensure the success of the business (Shirky, 2008). In addition, Shirky (2008) argues that new business ventures that have a flexible approach to BMs have a greater likelihood of success. This supports the views of Latifi et al. (2021) and Pati et al. (2018). Latifi et al. (2021) argued that BMI is a crucial factor for firm performance amongst European small and medium enterprises (SMEs) and Pati et al. (2018) shared this view that

younger firms have a strong positive relationship between BMI and firm performance than more mature firms. Therefore, BMI can assist entrepreneurs in creating value and improving the success of businesses.

1.3.2.3 The principle of affordable loss for entrepreneurs

The AL principle is one of five principles found in the theory of effectuation (Sarasvathy, 2008). The theory of effectuation has become prominent in the field of entrepreneurial behaviour and decision-making (An et al., 2020). The theory of effectuation is an entrepreneurial reasoning process where an entrepreneur assesses the means they have available to them and creates a general desired effect through those means (Sarasvathy, 2001).

When individuals take the “plunge” to enter entrepreneurship and when making decisions as an entrepreneur, individuals are faced with Knightian uncertainty. Knightian uncertainty is when the level of uncertainty is so high that no predictions can be made about the future (Sarasvathy & Kotha, 2001). Therefore, the positive side of entrepreneurial decisions is unknown (Dew et al., 2009). It is therefore posited by Sarasvathy (2001) and Dew et al. (2009) that entrepreneurs use the principle of AL to assess what they can afford to lose by making the decision or choice presented to them.

Through the findings of the study, current and potential entrepreneurs in SA will be able to apply the most applicable approach when facing risk and uncertainty. This will lead to entrepreneurs innovating their BM to achieve competitive advantage and superior firm performance.

1.4 THE PURPOSE STATEMENT

The purpose of this study is to add to existing knowledge of BMI with empirical evidence evaluating AL as an antecedent of BMI amongst entrepreneurs in SA.

1.5 SCOPE OF THE STUDY

This study will evaluate the South African entrepreneur's AL heuristic to assess the influence it has on BMI. Data will be collected on entrepreneurs across all levels of entrepreneurship and will not be specific to any industry.

1.6 LAYOUT OF THE DOCUMENT

The outline and aim of the remaining six chapters.

Chapter 2: the reader will be presented with the literature review, the definition of the academic constructs with their subconstructs and the relationship between the key constructs.

Chapter 3: the reader will be introduced to the research objectives, and the conceptual model and state the hypotheses for statistical testing.

Chapter 4: will present the research methodology, the research design for data collection and the analytical methods used for analysis.

Chapter 5: will present the reader with the descriptive analysis obtained from the data collected, the validity and reliability of the data, data cleaning and transformations and lastly the results of the statistical tests for each of the hypotheses.

Chapter 6: will present an interpretation of the descriptive analysis and the results of statistical tests performed per the hypothesis

Chapter 7: the reader will be provided with the implications of the research for entrepreneurs and businesses, the limitations of the study and recommendations.

1.8 CONCLUSION

Chapter 1 provided the reader with an understanding of the purpose of the study, the background of the problem the study seeks to address, the study's relevance to business and the study's relevance in academia. With these sections, the scope of the purpose and scope of the study was defined. The study also provided an outline of the chapters that are to follow. The following chapter discusses the key constructs of the study and the relationships between them.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review focuses on three main constructs: entrepreneurship, AL and BMI. First, the chapter begins by defining entrepreneurship, this is followed by the introduction of the theory of causation and effectuation and the drawing of a comparison between the two competing views. It then further explores the theory of effectuation with a focus on the principle of AL. This is followed by exploring the development of BM, the review of the opposing views of BM and, lastly, defining BMI. The chapter closes by relating AL with BMI.

2.2 ENTREPRENEURSHIP AND FIRM LIFE STAGES

2.2.1 Entrepreneurship

Entrepreneurs are regarded as risk takers, they have the ability to identify opportunities that others do not and act upon these opportunities (Gartner, 1990). Entrepreneurship is defined by the Global Entrepreneurship Monitor as “ the act or process of starting a new business” (GEM, 2022, p. 43). Gartner (1985) distinguishes between entrepreneurs and non-entrepreneurs. Entrepreneurs create new ventures and start-ups, while non-entrepreneurs manage or take control of existing businesses. Entrepreneurs participate in both the formal and informal economic markets. Informal markets are estimated to account for more than 50% of developing countries' GDP (Schneider & Enste, 2013). An informal market is defined as a market that does not abide by the country or state's legal structure such as the declaration of monetary financial transactions to the state's revenue services (Webb et al., 2009).

2.2.2 Entrepreneurial Stages

Based on TTM of change by Prochaska and DiClemente (1982, cited in Klonek et al. (2015) the entrepreneurial journey can be divided into five stages: pre-contemplation stage, contemplation stage, preparation stage, action stage and the maintenance stage. The TTM was initially designed and used in health psychology as a model that helps assess individuals' stages of initiating a change of behaviour towards a healthier lifestyle.

The first stage is the pre-contemplation stage. This is where the individual has not yet considered the change. In health psychology, this is when the individual has not

realised the need for change: it could be a health issue that the individual is unaware of. In the context of entrepreneurship, this is when the individual has not yet considered becoming an entrepreneur. The second stage is the “contemplations stage”. In this stage, the individual is contemplating making a change to their behaviour (Klonek et al., 2015). This could be the contemplation of quitting smoking or eating healthier foods and weighing up the benefits and costs associated with improving the individual's health. Similarly, for an entrepreneur, this is the stage where the entrepreneur contemplates starting new ventures. Here the entrepreneur assesses the risks, the environment and the potential benefits of the new venture. The first two stages are the cognitive stages in the journey and the latter three stages are more behaviour and attitude-orientated (Klonek et al., 2015). Stage 3 is the preparation stage: this involves planning, for example, diet plans in the health or business plans for an entrepreneur. Next, is the action plan, which is the execution of the plan and last is the maintenance stage, which is ensuring the plan is implemented. Based on the five stages of the entrepreneurial thought process, the study targets all stages of entrepreneurship as described by the TTM.

2.3 FIRM DEVELOPMENT LIFE STAGES

Firms go through a process of evolution, with many firms exhibiting similar development patterns (An et al., 2020). The most common development stages are the initial concept and development stage, the commercialisation growth stage, the consolidation stage and the maturity stage (Brettel et al., 2012; Galbraith, 1982). However, literature agrees on two common consolidated stages: the early development stage and the late development stage (e.g., Brettel et al., 2012; Hanks et al., 1994; Sharma & Salvato, 2011). In the early development stages of the firm tend to experience higher levels of uncertainty and have a lack of resources (An et al., 2020).

Although the effectuation principles were primarily applied to experienced entrepreneurs, researchers have widened the restrictions (e.g. Chandler et al., 2011; Reymen et al., 2017). For the purposes of this study, the definition of entrepreneurs means individuals either in the process of starting a business or those who have an operating business, entrepreneurs with varying levels of experience, at varying stages of the TTM model, self-employed individuals, and both formal and informal entrepreneurs.

2.3 EFFECTUATION AND CAUSATION AND ITS APPLICATION TO ENTREPRENEURSHIP

2.3.1 Defining Effectuation and Causation

Sarasvathy and Kotha (2001) base their work on effectuation on a series of responses to the work of Knight (1921) describing the level of uncertainty that entrepreneurs face as Knightian uncertainty. Knightian uncertainty is defined as true uncertainty, which is when events or outcomes cannot be reduced to a single probability distribution. This is different from risk which can be reduced to a single probability distribution (Knight, 1921). Sarasvathy and Kotha (2001) describe Knightian uncertainty as when the prediction of the outcome is impossible to make. Sarasvathy (2001) describes two different theories of the entrepreneurship process and appreciates them as a dichotomy. Causation and effectuation are both parts of human reasoning and decision-making.

The process of causation can be defined as a “process that takes a particular effect as given and focuses on selecting between means to create that effect” (Sarasvathy, 2001: p. 245). Effectuation processes on the other hand “take a set of means as given and focus on selecting between possible effects that can be created with that set of means” (Sarasvathy, 2001: p. 245).

There are five principles that are core to the effectuation process: the patchwork-quilt principle; the AL principle; the bird-in-hand principle; the lemonade principle and the pilot-in-the-plane principle (Sarasvathy, 2008). The patchwork-quilt principle can be described as a means-drive approach where an entrepreneur puts together and reconfigures various means to develop something that is new (Sarasvathy, 2008). The AL principle is described as an entrepreneur having a predetermined concept of what they are willing to lose before entering a new venture/project (Sarasvathy, 2008). The bird-in-the-hand principle is how an entrepreneur forms partnerships. The entrepreneur uses their network to form partnerships, which will determine the goal of the venture (Sarasvathy, 2008). Applying the lemonade principle is understanding the risks of the venture and putting plans together to mitigate or leverage the risks (Sarasvathy, 2008). The final principle is the pilot-in-the-plane principle which is about focusing on, creating and actioning what the entrepreneur has control of instead of actioning on an unpredictable future (Sarasvathy, 2008).

The five principles of effectuation by Sarasvathy(2001, 2008) were later adapted into four formative constructs of effectuation, namely experimentation, AL, flexibility and pre-commitments (Fisher, 2012; Perry et al., 2012).

2.3.2 The Differences between Effectuation and Causation

Sarasvathy (2001) illustrates the difference between causation and effectuation by describing the entrepreneurial journey in the start-up of an Indian restaurant called Curry in a Hurry. The entrepreneur decides to open an Indian restaurant in a town close by. If one were to use a model of causation, one would initially set a goal or 'effect' of opening this Indian restaurant. Thereafter, the different 'means' needed to attain this goal would be explored. The entrepreneur would spend time and effort researching and selecting a target market; deciding operational details; marketing their restaurant and eventually opening their restaurant.

In the Curry in a Hurry example, Sarasvathy (2001, 2008) explains in that if an entrepreneur had to use the model of effectuation, the entrepreneur would begin by examining the set of means that were available to them – this is the patchwork-quilt principle. Assuming that the entrepreneurs were limited financially, the entrepreneur would consider what available resources are at hand to achieve a favourable outcome – this demonstrates the application of the AL principle. The entrepreneur could consider approaching an established restaurant to become a partner; the entrepreneur could seek out a financial investor for their restaurant or approach an office of colleagues to create lunch-order sales – this is the entrepreneur applying the bird-in-the-hand principle. Potentially the entrepreneur could be led to a different business opportunity such as catering services or party planning to ensure the kitchen is busy during quiet times – this is an example of the lemonade and pilot-in-the-plane principle. As shown in the illustration, the process of effectuation enables the entrepreneur to have a generalised end goal but regardless of this, they may create one or more possible outcomes (Sarasvathy, 2001). The effectuation pursues a generalised aspiration, not a preselected or predetermined effect. The effect is constructed as a part of the effectuation process so the entrepreneur gets to change, shape and create their goals as time-lapses and circumstances unfold (Sarasvathy, 2001).

The main difference between causation and effectuation is the entrepreneur's choices. An entrepreneur who goes through the process of causation has a set end

goal and then *chooses* different means to achieve the end goal; whereas the entrepreneur who goes through the process of effectuation aims to rather develop an “effect” and is open to *choices* between multiple means to achieve the “effect” (Sarasvathy, 2001). Although Sarasvathy (2001), views causation and effectuation as two opposing logics, research has shown that causation and effectuation are not mutually exclusive (An et al., 2020; Fisher, 2012; Welter et al., 2016) – the processes can exist together dependent on the firms’ context and development stage (An et al., 2020).

2.3.3 Application to Entrepreneurship

When effectuation was first theorised it was applied to experienced entrepreneurs. However, Chandler et al. (2011) and Reymen et al. (2017) have applied a broader definition of entrepreneur’s experience. Sarasvathy (2001) suggested that entrepreneurs that apply the effectuation process distinguish between events that one can control and events that are uncontrollable. In the context of the Knightian uncertainty entrepreneurs face, especially in the early stages of a firm (An et al. 2020), the effectuation process is more likely to be used and more useful (Sarasvathy, 2001). This is supported by findings from Bortolini et al. (2018), Reymen et al. (2017) and An et al. (2020) who found that causation is appropriate for well-established businesses, whereas effectuation is more appropriate for start-up firms. This is due to the nature of uncertainty in start-ups and the limited resources available to them, therefore requiring start-ups to adopt a more experimental approach (An et al., 2020; Bortolini et al., 2018). In support of effectuation Xu and Koivumäki (2019) and Shirky (2008) found that experimental approaches such as effectuations develop more realistic BMs than causation does. This is due to the uncertainty start-ups encounter and the consequent need to apply a flexible approach.

It is important to note the findings from Chandler et al. (2011) and Werhahn et al. (2015), whose studies have found that effectuation is a formative construct of the five principles and that each principle is independent of the other. Therefore, the need for an entrepreneur to apply the AL principle is not dependent on the entrepreneur applying the patchwork-quilt principle or the remaining three principles of effectuation.

2.4 DEFINING THE PRINCIPLE OF AFFORDABLE LOSS (AL)

“Affordable loss involves decision-makers estimating what they might be able to put at risk and determining what they are willing to lose in order to follow a course of action.” (Dew et al., 2009, p. 105). Therefore, the process of AL entails evaluating one’s means and then making a precommitment to how much they are prepared to lose (Dew et al., 2009). AL heuristics consists of two components: the ability to estimate what one can lose and the willingness to take the ‘plunge’ (Martina, 2020). Making the ‘plunge decision’ refers to an entrepreneur taking the risk or deciding to follow through with implementing their business concept (Dew et al., 2009).

AL contrasts the traditional neoclassical investment theory way which is often taught (Dew et al., 2009). Traditionally, it is taught that entrepreneurs first assess and forecast the potential of an opportunity before venturing into said opportunity (Sarasvathy, 2001).

Smith (2022) developed a scale that measures an entrepreneur’s proclivity to AL during considerably uncertain times. The scale combines six components:

1. Assessing the entrepreneur’s proclivity to assessing what they can lose before making financial investments in new projects.
2. Assessing whether an entrepreneur considers the worst-case scenario to limit their financial risk while making investment decisions.
3. Assessing the impact that previous loss-making decisions had on the entrepreneur’s awareness of AL on investment decisions.
4. Assessing the entrepreneur’s willingness to invest small amounts of money in new ideas and projects.
5. Assessing the entrepreneur’s willingness to invest small amounts to prototype the new idea or project with the market.
6. Assessing if an entrepreneur views AL as a method to overcome uncertainty in investments.

Smith (2022) argued that AL consists of two latent factors. The first is the loss-based heuristic which develops due to loss aversion. This can be seen in items 1-3 on the AL scale. The second factor is experimentation that entrepreneurs employ in making small affordable investments towards reaching out to potential

opportunities. This is done while they wait to see what the investments yield. If the investment fails, it can be stopped quickly and cheaply. If the investment succeeds, then the entrepreneur can re-invest a little more cash into what gives positive initial returns. The experimental factor is reflected in items 4-6 on the AL scale.

2.4.1 Affordable Loss Business and Entrepreneurial Implications

Entrepreneurs operate in an environment of high uncertainty where it is difficult to make accurate predictions. Therefore, for entrepreneurs to make good decisions and take the step into entrepreneurship (the 'plunge') the entrepreneur needs to consider the downside possibilities of the opportunity (Dew et al., 2009; Sarasvathy, 2001). The decision of AL rests solely on the entrepreneur and this allows them to affirm some control in this unpredictable operation (Dew et al., 2009). Even with highly promising opportunities, one might face failure. Therefore, entrepreneurs often exclude their investment from the expected returns; i.e., they establish an AL (Dew et al., 2009). Studies such as Perry et al. (2012) have found that the use of effectuation is widely used when in pursuit of new venture and particularly amongst well-experienced entrepreneurs.

The use of the AL principle can lead to a start-up and entrepreneurial firm's success. Wiltbank et al. (2009) showed that angel investors (firms that invest in start-ups) that invested in ventures that used nonpredictive approaches such as AL when making decisions, had fewer investment failures without compromising on the number of successful ventures. This outlines the possible advantages of entrepreneurs using the principle of AL. Affordable loss is not only useful when deciding to venture into a new start-up. It can also be valuable in other contexts such as the development of new products, policies or infrastructure (Dew et al., 2009). However, a noted disadvantage of using AL may be that some entrepreneurs use the reasoning to limit or decrease their investment amount, which may leave start-ups, to begin with, with no resources (Dew et al., 2009).

There have been contrasting views on the AL principle; e.g., Roach et al. (2016) found that AL does not play a mediating role in a firm's innovativeness (product or service innovation). However, they found AL to be positively related to a firm's performance whereas Smolka et al. (2018) found a negative relationship between AL and firm performance. Smolka et al. (2018), posits that entrepreneurs using AL principle focus more on the risk and not the opportunity at hand, these

entrepreneurs are therefore risk averse which leads to poor performance of the firm. Read et al. (2009) found no relationship between effectuation and venture firm performance and Garonne and Davidsson (2010) found that when using effectuation, there was a positive relationship between growing start-ups and a high level of innovation. Pati et al. (2021) found a negative relationship between AL and BMI, arguing that by focusing on risk limitation, entrepreneurs avoid the exploration of opportunities; however, this study proposes to employ a dedicated affordable loss scale which is newly developed by Smith and Lew (2022).

2.5 BUSINESS MODELS AND BUSINESS MODEL INNOVATIONS

2.5.1 Definitions of Business Model

Morris et al. (2005: p. 727) define a business model as a “concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets”. Chesbrough (2010: p. 355) defined a BM as a firm’s “value propositions”, “target market”, “revenue mechanism”, “value network” or “competitive strategy”. Foss and Saebi (2017: p. 201) defined BM as a firm’s “design or architecture of the value creation, delivery and capture mechanisms”.

2.5.2 Emergent Literature on BM

According to findings by Foss and Saebi, (2017), emergent BM literature can be grouped into three major themes: early research which sought to understand the value of BMs within the e-commerce business; research around understanding the impact BMs have on firm performance and research on BMI as a unit of analysis.

2.5.3 What is Business Model Innovation?

Business model innovation (BMI) is regarded as any major change to one of the nine components outlined in the business model canvas by Osterwalder & Pigneur (2010, cited in Bhatti et al., 2021, p. 393). The components of the business model canvas are customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structures. Silva et al. (2020) describe BMI as the rearrangement of a firm’s current business model or the initial design of a start-up’s business model. Foss and Saebi (2017: p. 201) defined BMI as “designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these

elements.”. Futterer et al. (2018) defined BMI as innovation of any of four dimensions: value offerings, internal value creation, external value creation and financial architecture.

This study uses the definition of BMI provided by Clauss (2017). In an attempt to create a scale of measurement for BMI, Clauss (2017) found that literature on BMI can be consolidated into one of three subconstructs (see Table 1) of BMI: value-creation innovation, value proposition innovation and value capture innovation. Clauss (2017) theorised that BMI is a higher-order factor and noted that the ten multi-item scales (see Table 1) for each subconstructs are reflective. Each subconstruct of BMI measure the innovation of an area that impacts BMs.

To measure the impact on the subconstructs of BMI, Clauss (2017) suggests the use of the ten reflective multi-item scales he developed (see Table 1).

Table 1: BMI subconstructs and multi-item scale

BMI subconstructs	Reflective ten multi-item scale
Value-creation innovation	“(1) new capabilities (2) new technologies/equipment (3) new processes and structures, and (4) new partnerships” (Clauss, 2017, p. 387)
Value proposition innovation	“(5) New offerings (6) New customer segments/markets (7) New channels and (8) New customer relationships” (Clauss, 2017, p. 392)
Value capture innovation	(9) “New revenue models and (10) New price and/or cost structures” (Clauss, 2017, p. 392)

Adapted from: (Clauss, 2017)

2.5.3.1 Value-creation innovation

Sustained value creation according to Osterwalder and Pigneur (2010) is the rearrangement and changing of the business model components that address the logic and processes of how the organisation/business creates and captures value. Tantalo and Priem (2014) posit that value creation is when a firm creates value for its stakeholders. Andreini and Bettinelli (2017) described the aim of BM as value

creation. According to Matzler et al. (2013), value creation addresses the key question: what are the organisation's core capabilities and competencies? Understanding this allows the organisation to make outsourcing decisions on the organisation's value chain. Dyer et al. (2018) defined value creation "as the value created in an alliance that is above and beyond the value created in competing for arms-length market relationships" (p. 3141).

Clauss (2017) noted that value creation is how a firm forms value throughout its value chain. This can be generated through the development or acquisition of new capabilities, new technologies/equipment, new processes and structures or new partnerships formed.

2.5.3.2 Value proposition innovation

Brea-Solis et al. (2015), argued that the value proposition is the starting point for a firm's competitive advantage. The value proposition involves creating solutions and offerings that meet the customer's needs, including the method of delivery (Chesbrough, 2010; Morris et al., 2005). Creating a value proposition innovation requires the alignment of resources and processes to create a value offering for customers (Christensen & Johnson, 2009). Clauss (2017) described value proposition as the suite of offerings an organisation has to offer its customers. Their value proposition innovation necessitates a change in an organisation's offerings to its customers; by meeting the needs of new customers and markets or attracting new customers; improving the value offering by creating or adding new channels to reach the customer; or by developing and creating new relationships with customer markets.

2.5.3.2 Value capture innovation

Value capture refers to how the organisation turns its value proposition into revenues to ensure the organisation has sufficient revenues to sustainably cover its costs and generate a profit (Clauss, 2017; Teece, 2010). Priem et al. (2018) referred to value capture as the capitalisation of the value that was created. Thus, Clauss (2017), described value capture innovation as relating the organisation's revenue models with new models and new structures that allow the firm to price its proposition to cover its costs.

2.5.4 The Benefits of BMI

The popularity of BMI amongst businesses is due to the link BMI has with improved firm performance, this can be seen among tech-start-up firms such as Airbnb, Uber, Alibaba and Tencent (Zhang et al., 2021). Previous literature has indicated the importance of BMI and the success seen in (Latifi et al., 2021; Pati et al., 2018). Previous research has indicated the importance of BMI and the positive relationship BMI has on the performance of the firm (Latifi et al., 2021; Pedersen et al., 2018). A similar study was conducted confirming improved firm performance in nascent firms (Pati et al., 2018). Although firms experience improved performance, there are draw backs to innovating BMs, such as the extensive time it takes to change and innovate a BM, the research and development costs associated with BMI, the implementation costs and the high staff turnover, which can lead to firms to replicate other firms strategies and BMs, this can lead to below average firm performance (Aspara et al., 2010).

2.5.5 Opposing Views amongst Academics on BMI and BM

BMs and BMI have received the attention of many entrepreneurs and academic researchers. Despite all the hype around BMI and BMs, little is understood about the innovation of business models (Foss & Saebi, 2017) and there is yet to be a consensus among academics on the definition of BMs (Morris et al., 2005; Wirtz et al., 2016; Zott et al., 2011).

Some researchers view the impact of technological innovation as a key component in BMI which impacts the firm's performance (Chesbrough, 2010), while others treat the impact that technological innovation has on firm performance as a separate construct from BMI (Baden-Fuller & Haefliger, 2013).

It is unclear whether strategy forms part of a firm's BM. Chesbrough (2010) and Morris et al., (2005) conceptualise strategy as being a part of the BM; however, researchers such as Zott and Amit (2007) and Teece (2010), argue that strategy and BM should be treated as two separate constructs.

Despite researchers having opposing definitions of BMs. Researchers agree that: a BM is a unit of analysis that is separate from the innovation of processes, innovation of products and innovation of organisations; a BM is a system of how businesses operate; the firm's business network forms part of the BM and BMs address how a firm creates and captures value (Zott et al., 2011). Researchers

such as Zott and Amit (2007) and Foss and Saebi (2017) view BMI as a contributor to the firm's ability to create a competitive advantage in the long term.

2.6 RELATIONSHIP BETWEEN EFFECTUATION, AFFORDABLE LOSS AND BMI

Chesbrough (2010) was amongst the initial researchers to link effectuation to BMI. He expressed the need for firms to embrace the process of effectuation to innovate their BM, while keeping the AL principle in mind to limit losses. This is particularly important for start-ups; for instance, Snihur and Zott (2020) found that entrepreneurial thinking impacts the level of BMI among start-ups. This relationship is supported by findings from Pati et al. (2018) who found that start-ups have a stronger positive relationship between BMI and firm performance than more established firms. Further to this, studies have found relationships between effectuation and innovation such as An et al., (2020) and Grégoire & Cherchem (2020). In a structured literature review article, Grégoire and Cherchem (2020), found evidence to support a stylised observation: the use of effectuation positively affects innovation and creativity. Similar findings were supported by Reymen et al. (2017), who found a relationship between effectuation and BMI in areas such as value proposition, revenue streams, cost structures, key partners and key resources and activities.

Futterer et al. (2018) posited that adopting the entrepreneurial effectuation process reduces the barriers to BMI and therefore allows firms to continuously improve their BMI. In addition to this, Szambelan and Jiang (2020) have found that AL reduces the perceived market-based barriers to innovation. Furthermore, Szambelan and Jiang (2020) posit that the through AL increases the firms control and therefore lowering the level of disappointment when investments fail, this in turn leads to increased innovation. Futterer et al. (2018) argued that by applying the principle of AL, firms limit their risk and are forced to improvise due to their limited resources – this leads to an increase in BMI.

In environments with uncertainty and high levels of innovation are similar environments that entrepreneurs face and that this makes it difficult for both managers of R&D projects and entrepreneurs to determine accurate projections (Brettel et al., 2012). Furthermore, Brettel et al. (2012) posits that the with use of AL can lead to more efficient R&D within firms, therefore allowing for increasing in risk

appetite for other entrepreneurial projects. However, Pati et al., (2021) hypothesised that AL would positively impact BMI but found contrary evidence that showed that AL had a negative impact on BMI. It was, therefore, hypothesised that AL has a positive relationship with research in high innovation projects. Quantitative evidence by Brettel et al., (2012) was found to back this hypothesis. In addition to this, Martina (2020) found qualitative evidence supporting that when entrepreneurs are faced with uncertainty, they have the proclivity to make an AL investment. Contrary to this, the AL principle in an extreme case can dissuade an entrepreneur from large initial investments and therefore limiting innovation (Sarasvathy & Kotha, 2001).

2.7 CONCLUSION

The literature review has confirmed the importance of the three constructs of this study: Entrepreneurship, BMI and AL within academic literature. Academics have explored and empirically tested the benefits BMI has for firms e.g. (Foss & Saebi, 2017), researcher have also indicated the importance of research in the field of entrepreneurship (Kraus et al., 2021) and that AL is an appropriate approach to risk for entrepreneurs (Dew et al).

Due to the limited and opposing findings on the relationship between AL and firms e.g. (Roach et al., 2016; Smolka et al., 2018); the findings of Futterer et al. (2018) and Reymen et al. (2017) on relationship effectuation and the dimensions of BMI, this study will focus empirically testing the relationship between AL and BMI, by testing the subconstructs of BMI as outlined by Clauss, (2017): value creation, value propositions and value proposition innovation.

CHAPTER 3: RESEARCH QUESTION AND HYPOTHESES

3.1 INTRODUCTION

There have been recent studies linking the theory of effectuation to increasing BMI (Futterer et al., 2018; Grégoire & Cherchem, 2020; Reymen et al., 2017). However, there have been inconsistent findings from researchers (e.g. Roach et al., 2016; Smolka et al., 2018; Pati et al., 2021) as outlined in Chapter 2 on the impact AL has on firms and its performance. This Chapter intends to link literature to develop a research question and forms hypotheses to answer the research question. The chapter ends with the introduction of the hypothesised theoretical model formed.

3.2 RESEARCH QUESTION

Various studies have found evidence supporting the relationship between effectuation and innovation. In a recent study done, An et al. (2020) has found that early-stage ventures adopt effectuation, thus allowing for flexibility and learning within the venture, this is therefore a more adaptive approach for the early stages of the venture. The argument by An et al. (2020) is supported by Bortolini et al. (2018) and Reymen et al. (2017). Brettel et al. (2012) posits that the use of AL creates efficiencies in firms, which in turn allows for high levels of tolerance for failure which ultimately leads to increased innovation. In addition to this, Brettel et al. (2012) argued that through the efficiencies created, firms are forced to innovate their BMs. Brettel et al. (2012) arguments were supported by empirical evidence which found that by applying the theory of effectuation corporate firm innovation was positively impacted. This is supported by the findings of Szambelan and Jiang (2020), they found that the use of AL reduced perceived innovation barriers, therefore leading to an increase in innovation. Similar findings by An et al., (2020) and Grégoire & Cherchem (2020) support the view that effectuation leads to increased innovation. Furthermore, Reymen et al. (2017) found that entrepreneurs often assess their means and use effectuation when creating value proposition for customers and creating new customer segments. However, in a study done by Pati et al. (2021) on owner-manager of firms, they found that AL had a negative relationship with BM novelty.

The use of AL is important for entrepreneurs due to the limited resources they have at hand (Dew et al., 2009). By using this principle the entrepreneur can limit the risk they face which can lead to the entrepreneur embracing innovation and taking on

calculated risks that can lead to the innovation of the business model (Futterer et al., 2018). Based on the theory of effectuation in its entirety having been linked to BMI and the link between AL and innovation, the study sought to expand the existing knowledge of AL and BMI amongst entrepreneurs in SA by answering the overarching research question: What is the impact of AL on BMI amongst South African entrepreneurs? With this, three hypotheses were formed to test the relationship of AL and the formative constructs of BMI.

3.3 HYPOTHESES

Based on the literature review, it has been hypothesised that there is relationship between AL and BMI. However, as per Clauss's (2017) definition, BMI has three formative constructs: value-creation innovation, value-proposition innovation and value-capture innovation. Therefore, to answer the research question, three hypotheses were developed to be tested. Figure 1 outlines the hypothesised theoretical model of the research.

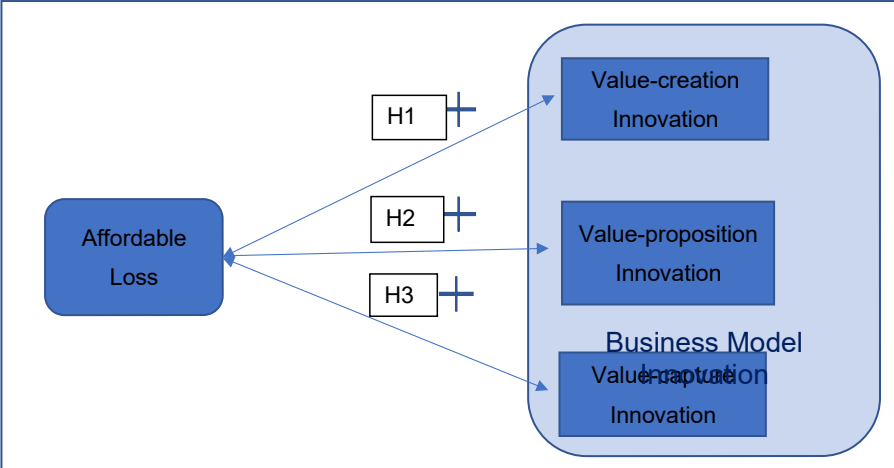


Figure 1: Hypothesised theoretical model

Value-creation innovation is the innovation of a firm's value chain which is achieved through the development or acquisition of new capabilities, new technologies and equipment, the creation of new processes and structures or the creation of new partnerships to create value for the firm's stakeholders (Clauss, 2017). Through the use of the AL principle, while an entrepreneur is faced with uncertainty, AL can

assist the entrepreneur to limit the downside side which can lead to innovation in creating value for its stakeholders.

H1 null: There is no relationship between AL and value-creation innovation

H1 alternative: There is a positive relationship between AL and value-creation innovation

Value proposition innovation is the innovation of the firm's value proposition and its distribution channel. This is achieved by innovating the proposal to customers. This can either be the offering to the customer, the target market, or the distribution of the offering (Clauss, 2017). Reymen et al., (2017) have found that the use of effectual was prominent amongst new ventures in creating value proposition. It is, therefore, hypothesised that AL can assist entrepreneurs to develop new offerings, create new target markets or innovate their distribution methods to customers. This can assist the entrepreneur in creating a competitive advantage over its competition.

H2 null: There is no relationship between AL and value proposition innovation

H2 alternative: There is a positive relationship between AL and value proposition innovation

Value capture innovation is how the firm capitalises on its value offerings; therefore innovating its cost structures or revenue models to realise the value and make a profit (Clauss, 2017). With AL, entrepreneurs are able to limit their risk to explore new revenue models and cost structures that will help them differentiate from competitors.

H3 null: There is no relationship between AL and value capture innovation

H3 alternative: There is a positive relationship between AL and value capture innovation

3.4 CONCLUSION

This chapter has outlined the hypotheses that the study aims to answer and provided the reader with the theoretical model of the research paper. The following chapter describes the research method used to answer the research question and hypotheses

CHAPTER 4: THE METHODOLOGY

4.1 INTRODUCTION

The methodology chapter outlines the research design of the study; the proposed research methodology that is relevant and suitable for answering the research questions, the data analysis approach and the limitations of the study.

The research design section is structured using the six layers of the research onion by Saunders et al. (2016): the purpose of the research design; the philosophy; the research approach selected to develop the theory; the methodological choice; the strategy and the time horizon. The methodology section is divided into nine parts describing the population of the study; the unit of analysis for the research; the sampling frame and sample size required; the measurement instrument that will be used; the data collection process; the data analysis methods and process; the quality assurance to maintain the integrity of the data collected; the data analysis approach outlining the steps taken to analyse the data and finally the limitations of the study.

4.2 CHOICE OF RESEARCH DESIGN

4.2.1 Purpose of Research Design

The purpose of the research was to gather quantitative data to describe the relationship between the two constructs AL and BMI among entrepreneurs in South Africa. Thereafter the researcher used descriptive data to provide a valuable explanation of the findings. The choice of research design was, therefore, descripto-explanatory (Saunders et al., 2016).

4.2.2 Philosophy

Research philosophy refers to how the research is developed in the selected area of study (Saunders et al., 2016). The research paper aimed to test the theory and provide an unbiased, objective and generalisable view of the relationship between AL and BMI among entrepreneurs in SA (Johnston, 2014). Based on this the philosophy was positivist.

4.2.3 Research Approach Selected

The deductive research approach consists of collecting data to test and analyse a set of theorised propositions (Saunders et al., 2016). This approach limits the

exposure to bias from the researcher (Saunders et al., 2016). Therefore, the approach chosen was deductive, as the research aimed to collect data to test the hypotheses set out by explaining the relationship between AL and BMI.

4.2.4 Methodological Choice

There are three types of research methods noted by Creswell (2014). These are qualitative, quantitative and mixed methods. Qualitative methods are an exploratory in nature, with the research draws information from through the analysis of pictures or words (Creswell, 2014). Quantitative method is an empirical approach to the the study, therefore the use of data such as numbers, are used to test theories and hypotheses (Creswell, 2014). The mixed method included both qualitative and quantitative methods.

It has been gathered from previous research investigating the antecedent of BMI that the study is to be conducted using only quantitative methods (An et al., 2020; Futterer et al., 2018; Pedersen et al., 2018). The research methodological choice was a mono-method using quantitative methods only.

4.2.5 Strategy

The research aimed to evaluate the relationship between AL and BMI. To enable the study to answer the research objective, a large body of data assessing AL and BMI needed to be collected in a structured and consistent manner from South African entrepreneurs (Saunders et al., 2016). Therefore, questionnaires were sent out to South African entrepreneurs via a self-reported survey tool – google forms.

4.2.6 Time Horizon

The research question aimed to assess the effect AL has on BMI for entrepreneurs in the South African context. The research question the study aimed to answer did not explore the causal element between the constructs nor did the data observed need to be changed (Bono & McNamara, 2011). Therefore, the time horizon for the research was cross-sectional. Previous studies have also conducted cross-sectional data collection (Foss & Saebi, 2017).

4.3 RESEARCH METHODOLOGY

4.3.1 Population/Universe

A population is an entire group of subjects the research aims to draw a conclusion on and a sample is a subset of this group (Saunders et al., 2016). The theory of effectuation and principle of AL aims to explain entrepreneurial behaviour; therefore, the research question aimed exclusively to study the relationship between the AL constructs among entrepreneurs' BMI. This is also supported by previous research conducted by Roach et al. (2016) and Smolka et al. (2018). The target population of the study was entrepreneurs operating in SA. As discussed in Chapter 2, entrepreneurs are individuals either in the process of starting a business or someone who has an existing business, entrepreneurs with varying levels of experience, at varying stages of the TTM model, self-employed individuals, and both formal and informal entrepreneurs.

4.3.2 Unit of Analysis

Surveys were sent out to entrepreneurs (Roach et al., 2016; Silva et al., 2020; Smolka et al., 2018), thus allowing the data to be analysed on an individual or organisational level. However, based on the objectives of the research; the questionnaires were focused on understanding the entrepreneurs' proclivity to AL and the changes the entrepreneurs effected to BMI. Thus, the unit of analysis was at an entrepreneur level.

4.3.3 Sampling Method and Size

A sampling frame represents a full list of elements from the target population (Saunders et al., 2016). Given the legislation of the Protection of Personal Information Act (POPIA), there is no public list of South African entrepreneurs (The Presidency, 2013). As a result, the collection of data for an appropriate sample size from entrepreneurs was envisaged to be difficult; thus the sampling method selected was non-probability sampling using the snowballing technique. A survey was used and distributed using the researcher's networks and social media and participants were asked to share the survey with other entrepreneurs in their networks.

To reduce the sampling error an appropriate sample size is needed. The larger the sample set, the smaller the risk of sampling error and bias; however, getting large

samples is not always possible as it depends on the researcher's available resources (Taherdoost, 2017). Taherdoost (2017) suggests the following formula be used to determine the sample size:

$$n = p (100-p)z^2 / E^2$$

"n is the required sample size, P is the percentage occurrence of a state or condition, E is the percentage maximum error required, Z is the value corresponding to the level of confidence required" (Taherdoost, 2017, p. 237).

The margin of error (E) that was used was 5%, and the corresponding Z value was, therefore, 1.96.

For unknown values of P, an estimated value of 50% is suggested by Bartlett et al. (2001). The population is estimated to be greater than 10 000; therefore the required sample size n is 384.

However, Bartlett et al. (2001) suggest that an adequate sample size is 119 based on a p-value (alpha levels) of 5% (see Table 2). The work of Bartlett et al. (2001) is based on error estimation, variance estimation and is determined by continuous and categorical variables.

Table 2: Table to determine minimum sample size base on population size for both continuous and categorical data types

Population size	Sample size					
	Continuous data (margin of error=.03)			Categorical data (margin of error=.05)		
	alpha=.10 t=1.65	alpha=.05 t=1.96	alpha=.01 t=2.58	p=.50 t=1.65	p=.50 t=1.96	p=.50 t=2.58
100	46	55	68	74	80	87
200	59	75	102	116	132	154
300	65	85	123	143	169	207
400	69	92	137	162	196	250
500	72	96	147	176	218	286
600	73	100	155	187	235	316
700	75	102	161	196	249	341
800	76	104	166	203	260	363
900	76	105	170	209	270	382
1,000	77	106	173	213	278	399
1,500	79	110	183	230	306	461
2,000	83	112	189	239	323	499
4,000	83	119	198	254	351	570
6,000	83	119	209	259	362	598
8,000	83	119	209	262	367	613
10,000	83	119	209	264	370	623

Source: (Bartlett et al., 2001)

Based on sample sizes from previous studies (e.g., Brettel et al., 2012; Szambelan and Jiang, 2020) Roach et al., 2016), which ranged from 123 to 164 and considering the work of Bartlett et al. (2001), this study aimed to have a minimum sample size of 119.

4.3.4 Measurement Instrument

A survey questionnaire was used to collect data. The survey (Appendix A) was conducted in the English language with the following sections: pre-screening questions to determine the validity of the participant; demographic questions; a questionnaire to determine the participant's willingness and proclivity to AL and finally a questionnaire to measure the participant's BMI. The pre-screening questions are discussed later under quality control.

4.3.4.1 Demographics

To better understand the participant of the survey demographic data was collected. Seven questions were asked, this is outlined in Table 3.

Table 3: Demographic questions

Demographics	Sub/construct	Code
What is your age?	Demographics	DM1
Are you a South African Citizen?	Demographics	DM2
What is your gender?	Demographics	DM3
What is your highest educational qualification?	Demographics	DM4
How many years have you been an entrepreneur?	Demographics	DM5
Is your primary business based in South Africa?	Demographics	DM6
How many businesses do you own?	Demographics	DM7

4.3.4.2 Affordable loss

The AL construct was collected as quantitative numerical data. The measurement scale used to measure the proclivity if AL within an entrepreneur was developed by Smith and Lew (2022). Refer to Table 4 for the questions related to the AL scale. Smith and Lew (2022) reported a Cronbach's alpha score of 0.78 for the measurement scale. The AL scale was assessed using a 7-point Likert scale as used by Werhahn et al. (2015), with the value of 1 indicating that the respondent "strongly disagrees" with the statement/question and the value of 7 indicating that the respondent "strongly agrees" with the statement/question (Appendix C).

Table 4: Affordable loss scale

Affordable Loss	Sub/construct	Code
If times are considerably uncertain for my business, I think about what I can afford to lose before investing money in new projects.	Affordable Loss	AL1
When making business investments under conditions of uncertainty, it is important to keep the worst-case scenario in mind in order to avoid losing too much money on a project.	Affordable Loss	AL2
Previous losses during times of uncertainty have made me more aware of what I can afford to lose before investing in new ventures.	Affordable Loss	AL3
When things are uncertain for my business, I tend to invest small amounts of money in new ideas or projects to see how they work out.	Affordable Loss	AL4

Affordable Loss	Sub/construct	Code
When facing uncertainty in my business, I tend to experiment by making small investments and waiting to see what the response is from the market before spending more money.	Affordable Loss	AL5
When things are uncertain for my business, I can overcome this by spending affordably to test out new ideas.	Affordable Loss	AL6

4.3.4.3 Business model innovation

To measure BMI, a questionnaire was created using the measurement scale by Clauss (2017). Clauss (2017) divided BMI into three dimensions with 10 subdimensions refer to Table 5 for a list of questions. Clauss (2017) calculated the Cronbach's alpha to range between 0.7 and 0.87 for the three dimensions. A total of 22 questions were developed to measure the three dimensions (Appendix A). A 7-point Likert scale BMI was used to measure the subdimension of BMI, with the value "1" indicating "strongly disagree" and the value "7" indicating "strongly agree" with the statement/question (Appendix A).

Table 5: Questions of the subconstructs of BMI

Business Model Innovation	Sub/construct	Code
Value Creation Innovation		
I have added new capabilities to my business in the last year.	Value-Creation Innovation	CR1
I have added new technologies/equipment to my business in the last year.	Value-Creation Innovation	CR2
I have created a new processes or structures to my business in the last year.	Value-Creation Innovation	CR3
I have formed new partnerships in my business in the last year.	Value-Creation Innovation	CR4
Value Proposition Innovation		
I have introduced new offering/s in my business in the last year.	Value Proposition Innovation	PI1
I have targeted new segments/market in business in the last year.	Value Proposition Innovation	PI2
I have introduced new channels to my business in the last year.	Value Proposition Innovation	PI3
I have developed new customer relationships for my business in the last year.	Value Proposition Innovation	PI4
Value Capture Innovation		
I have created new revenue streams for my business in the last year.	Value Capture Innovation	CP1
I have introduced new pricing or cost structure to my business in the last year.	Value Capture Innovation	CP2

4.3.5 Data Gathering Process

Quantitative researchers have multiple instruments at their disposal to collect data such as non-experimental methods which include survey questionnaires (Creswell, 2014). The study collected data using survey questionnaires distributed by using Google forms. Google forms was favoured over other tools due, to the ease of use, the ability to set a cut-off date and time for the survey and the ability to administer the same survey via different platforms; i.e., hyperlinks in social media links and general links that can be shared via email. The survey link was distributed via email, WhatsApp, Facebook, LinkedIn and Instagram. Data collected was cross-sectional and the survey tool was open from the 4 August to 9 September 2022.

At the outset, the researcher anticipated the difficulty of contacting and collecting data from entrepreneurs. The researcher gathered a group of 15 close friends and family to help assist with data collection. Each member of the group had a target of reaching out to five entrepreneurs to complete the survey and to follow up with the entrepreneurs. Through this effort, 90 entrepreneurs completed the survey within 3 weeks. Three rounds of this approach were deployed. There was still a shortage of 30 participants to reach the minimum threshold of 119 participants. The researcher went out in search of entrepreneurs and approached business owners in malls, pop-up markets, shopping centres and businesses parks in the Centurion area. The minimum threshold of 119 participants was reached after 6 weeks of data collection.

4.4 DATA ANALYSIS APPROACH

The analysis approach taken to analysis the data and test the hypothesis used a confidence interval of 95%; this is a p-value 5%. The steps taken to analyse the data were as follows: data coding, data editing and cleaning, quality controls and pretests, descriptive statistics, tests for normality, validity of the constructs, reliability of the constructs, testing the means and lastly the hypothesis testing.

4.4.1 Data Coding

Data collected on the constructs – AL, value-creation innovation, value proposition innovation and value capture innovation – used a 7-point Likert scale ranging from strongly disagree to strongly agree. The 7-point Likert scale was converted to numerical data with strongly disagree converted to a numerical value of 1 through

to strongly agree converted to a numerical value of 7. This allowed the relevant statistical tests to be conducted.

4.4.2 Data Editing and Cleaning

The data from Google forms was extracted into Microsoft Excel files. Thereafter, the data was cleaned and then imported into IBM SPSS Statistics version 28 to do the statistical analysis.

Data missing from the surveys are evaluated by assessing the probabilities of the missing data given the entire dataset (Schafer & Graham, 2002). There are three categories of missing data: missing at complete random (MCAR), missing at random (MAR), and missing not at random (MNAR) (Schafer & Graham, 2002). With MCAR, the missing variable are not related to any other variables and there is no pattern to the missing variables (Schlomer et al., 2010). MAR is identified when there is a relation to another variable (Schafer & Graham, 2002; Schlomer et al., 2010). MNAR is identified through detecting the pattern of the missing variable; if a pattern exists, this is deemed to be MNAR (Schlomer et al., 2010). Mean substitution was used to replace the MCAR variables; however, if the missing variables were not MNAR, the use of mean substitution can create a bias in the data (Pallant, 2011; Schlomer et al., 2010).

4.4.3 Quality Controls and Pretesting

Quality control is the process of ensuring accuracy and quality of the data collected (Lavrakas, 2008). To ensure quality control, pre-screening questions were added to the survey to evaluate the appropriateness of the participant. Table 6 lists the pre-screening questions that were used to determine whether the participant met the definition of a South African entrepreneur.

Table 6: Pre-screening questions

Question	Answer selection	
My business is based in South Africa	Yes	No
My business is in pursuit of profit	Yes	No

The questionnaire went through ethical clearance before it was administered. Ethical clearance was received on the 3rd of August 2022 (See Appendix A).

To ensure the survey is easy to use, easy to navigate and understandable. The survey was pretested before it was sent out for data collection. Pretesting was conducted by three entrepreneurs of varying ages. The results of the pretesting was collected through email. Errors were found on grammar, the phrasing of questions and spelling.

Data collected has been stored using the authors Google cloud drive and will remain saved for a minimum of 10 years.

4.4.4 Descriptive Statistics

Descriptive statistics describe the characteristics of the data in a summarised view (Pallant, 2011; Zikmund et al., 2013). Descriptive statistics, therefore, assist with understanding the nature of data that is collected. Descriptive statistics were conducted using both Microsoft Excel and SPSS version 28.

First, sample descriptive statistics were reported in Chapter 5. This included reporting on the total number of participants pre and post screening. The demographic questions in the questionnaire are categorical data; therefore, pie charts were used to illustrate the demographics of the participants such as gender, highest level of qualification, number of businesses owned and the years of experience the entrepreneur had. Second, descriptive statistics were conducted on the research constructs reporting on the frequency of occurrence, mean, mode, range, skewness and kurtosis. Skewness describes whether the distribution has a larger spread of occurrence on either side of the distribution (called tails), whereas kurtosis describes the height of the distribution (Mertens et al., 2016).

4.4.5 Test of Normality

It is important to test the normality of the data to determine the correct statistics test to be used. When the assumption of normality is violated, non-parametric tests are used (Singh, 2007). Non-parametric tests are not dependent on the central tendency of the variable; on the other hand, parametric tests make the assumption of normality (Singh, 2007).

Although central tendency statistical measures were conducted, the Shapiro-Wilk and Kolmogorov-Smirnov tests were used on SPSS to statistically test whether the results of the constructs were normally distributed. If the Shapiro Wilks test's p-value is less than 0.05, it means the data are not normally distributed (Mertens et

al., 2016); likewise, if the p-value returned from the Kolmogorov-Smirnov is less than 0.05, the distribution is not normally distributed (Pallant, 2011).

4.4.6 Construct Validity

The validity of the scale refers to the accuracy of the scale measuring what it is intended to measure (Mertens et al., 2016; Pallant, 2011). If a construct is found not to be valid, the researcher is unable to draw conclusions based on the measurement scale of the construct (Zikmund et al., 2013). To test the validity of each of the scales used in the study, a bi-variate correlation analysis was conducted and the Pearson's correlation coefficient was used to determine the validity of the items to the total item score (Hair et al., 2018). The total item score was calculated per participant and each item of the scale was summed up to form the total item score. For the AL scale, the total item score was calculated by summing up items AL1, AL2, AL3, AL4, AL5 and AL6. For BMI subconstruct CR, the total item score was calculated as by summing up items CR1, CR2, CR3 and CR4. For BMI subconstruct CP, the total item score was calculated by summing up items CP1, CP2, CP3 and CP4. For BMI subconstruct value-proposition innovation (PI), the total item score was calculated by summing up items PI1, PI2, PI3 and PI4.

The bi-variate correlation was calculated using SPSS. From the bi-variate correlation matrix, the Pearson's correlation coefficient results between each item of the scale to the summed scale total were analysed (Clauss, 2017). The Pearson's correlation measures the strength of the relationship between two items (Mertens et al., 2016; Pallant, 2011). Based on a 95% level of confidence, if the p-value was less than 0.05, there is a significant correlation between the total scale and the item/question is therefore valid to measure the construct. This was conducted for each construct scale and subconstruct scale of the study (Clauss, 2017): AL, value-creation innovation, value PI and value capture innovation.

4.4.7 Variable Reduction

To reduce the number of variables to analyse, exploratory factor analysis (EFA) was selected as the variable reduction technique. As stated in Section 4.3.3, a minimum sample size of 119 was needed to conduct statistical tests (Bartlett et al., 2001). EFA allows for variable/questions to be grouped together for analysis (Hair et al., 2018). SPSS version 28 was used to conduct the tests for factor analysis per construct: AL and BMI.

Before applying the EFA variable reduction technique, the output from the Pearson's correlation matrix was analysed. This was done to determine the relationship between the construct's items/questions. To determine a relationship, each item/question from the output needed to be correlated to at least one other item/question of the construct with a Pearson's correlation value above 0.3 (Hair et al., 2018; Pallant, 2011).

Thereafter, the output of the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity was analysed. This was done to ensure that EFA could be conducted. A minimum KMO value of 0.5 is need to perform factor analysis and the Bartlett's test of sphericity was checked for significance at a 95% level of confidence (Pallant, 2011). Therefore, a p-value of less than or equal to 0.05 was needed before conducting the EFA.

To determine the number of components/factors to be extracted from the construct, the output of the total variance explained was analysed. The number of components are determined by the total variance explained; an eigenvalue above 1 indicates that the total cumulative variance is above 60% which indicates the number of components for the construct (Pallant, 2011; Singh, 2007). The groupings of the items/questions were classified by the rotated component matrix. The highest loading independent of the sign indicated the grouping of the item.

4.4.8 Reliability

To test for reliability of the construct and subconstructs, the Cronbach's alpha test was used. Cronbach's alpha tests for internal consistency of the variables/questions related to the construct or subconstruct it forms (Clauss, 2017; Hair et al., 2018; Mertens et al., 2016; Pallant, 2011). To confirm reliability of the construct a minimum Cronbach's alpha score of 0.65 was needed (Clauss, 2017; Hair et al., 2018; Mertens et al., 2016; Pallant, 2011). All constructs had a Cronbach's alpha above 0.65; therefore no items/questions needed to be removed to improve reliability of the construct (Clauss, 2017; Hair et al., 2018; Mertens et al., 2016; Pallant, 2011). The minimum number of items that make up a scale is two. If a construct's Cronbach's alpha remains below 0.65 after removing all but two items, the construct is not reliable, and is, thus, a limitation of the study.

To ensure accurate results of the Cronbach's alpha score, all negatively worded items/questions were reverse coded.

4.4.9 Hypothesis Testing

The hypotheses developed aims to assess the relationship between two constructs/subconstructs. There are two methods to determine the relationship between variables: correlation analysis and regression analysis. Correlation analysis assesses the relationship between two variables whereas regression analysis can be used to assess the relationship of two or more variables (Mertens et al., 2016; Pallant, 2011). Based on the hypotheses, correlation analysis was selected as the most appropriate technique.

Before conducting the correlation test, scatter plotters were created in Microsoft Excel to determine the relationship between the two variables. Thereafter, correlation analysis was conducted using SPSS version 28. From the SPSS output, the correlation value was determined. The direction of the relationship was determined by the sign of the value (R^2) and a 95% confidence interval was used to determine the significance of the relationship. The strength of the relationship was determined using the Cohen's d statistic (Pallant, 2011; Singh, 2007). The strength interpretation is noted in Table 7.

Table 7: The strength of R^2

Strength interpretation	Correlation R value
Small	Between 0.10 and 0.29
Medium	Between 0.30 to 0.49
Large	Greater than 0.5

Adapted from: (Pallant, 2011)

4.4.10 Limitations and Assumptions

The study had six notable limitations. Firstly, using snowballing and convenience sampling techniques to collect data can create a bias. This is due to the close relations of each participant that is referred to while using the snowballing technique. Second, there is a possible existence of a lagging effect between the antecedent (AL) and BMI. Given that the data were collected using cross-sectional data, these lagging effects could not be accounted for (Bhatti et al., 2021). It is, therefore, suggested that future studies be conducted using longitudinal data. Third, the study does not evaluate the causal effect of the three constructs (AL and

BMI). Fourth, the survey questionnaire did not ask sufficient questions to identify an entrepreneur. This could lead to inaccurate results. Sixth, the questionnaire was administered only in English, therefore excluding groups of entrepreneurs that do not speak English. Lastly, there are varying concepts of BMI and previous studies have found inconsistent results on BMI to firm performance because of these varying definitions (Bhatti et al., 2021; Zhang et al. 2021). The relationship to BMI will also be altered by the varying definitions of BMI.

CHAPTER 5: RESULTS

5.1 INTRODUCTION

This chapter presents the results of the data collected from the online survey. The chapter highlights the pre-test and survey response rates, the data cleaning that was conducted, the result from the constructs tests of validity, the results of the constructs tests of reliability, results of the variable reduction technique, the descriptive analysis, the results of the statistical analysis and the results of the hypotheses tested.

5.2 PRE-TEST PHASE AND SURVEY RESPONSE RATE

The survey was pre-test by three entrepreneurs of varying ages. From the pretesting it was determined that the time to complete the survey varied from 7 minutes to 10 minutes. However, an additional five minutes was added as buffer time for the possibility of participants that may take longer than the time allocated. The time frame for completion was added to the survey introduction and consent. The tester also identified spelling mistakes and grammar issues with questions pertaining to the demographics and the AL construct. In addition to this, the testers asked that the questions relating to BMI needed a time frame. For instance, question CR4 was previously asked as "I have added new partnerships to my business", after making adjustments from pretesting, CR4 was changed to "I have added new partnerships to my business in the last year". The three participants' responses were not included in the results of the study.

After the pretesting phase, the survey was opened to participants from 4 August to 9 September. At this time 141 participants had partaken in the survey, including pretesting participants and participants that did not meet the SA entrepreneur definition as outlined in section 4.4.3 – this is discussed further in section 5.3.1. As outlined in Chapter 4, the method selected for data collection was the snowballing method. Because of this, the number of surveys distributed by participants could not be quantified and it was not possible to calculate an accurate a survey response rate.

5.3 DATA CLEANING AND TRANSFORMATION

5.3.1 Data Cleaning

In total, 141 participants completed the survey. This was inclusive of nine invalid participants who did not fit the SA entrepreneur definition, three pretesting participants and 1 incomplete record. The incomplete response was marked for deletion because the participant only completed the first two questions of the demographics section in the questionnaire. Therefore, no questions pertaining to the research constructs were answered and this entry was deleted. These 14 records were marked for deletion. Hence, in total there were 127 participants remaining that were used for descriptive and statistical analysis. These 127 participants were considered valid participants. Table 8 depicts the deletion steps to arrive at 127 valid participants.

Table 8: Deletion steps to arrive at final number of valid participants

Description of entry	Number of occurrences	Remaining entries
Total number of entries of participants captured		141
Less: Number of pretesting participants	-3	138
Less: Number of Invalid entries – participant that did not meet the definition of SA entrepreneur	-10	128
Less: Number of incomplete entries	-1	127
Remaining number of participants		127

From the remaining 127 participants, the questionnaire completion rate was 99.9% - 3 questions from a total of 2 944 questions asked were not completed. The three questions that were not completed by all participants were AL1, CR4 and PI4. These records were addressed and discussed further in section 5.3.1.2.

5.3.2 Data Coding

As outlined in 4.4.1, data was collected using a 7-point Likert scale. To allow for the analysis of the data using quantitative measures, the data was converted to numerical data with strongly disagree converted to the value 1 through to strongly disagree which was converted to the value 7.

5.3.3 Missing Data

Due to the low frequency of missing data, mean substitution was used. Schafer and Graham (2002) states that if the missing data is less than 3%, the use of mean substitution is preferred over line deletion. As mentioned in the previous section,

three questions were not completed by all participants: AL1, CR4 and PI4. The missing data was less than 3% for each of the three questions, therefore mean substitution was used to replace the missing value. See Appendix D for a full table of completion rate and frequency per question asked in the survey relating to the research constructs.

The frequency of missing answers for question AL1 was 1 data point. This constituted 0.78% of all possible data points for AL1. As outlined in Section 4.4.2, the missing data was considered as MAR and was less than 3%. It was, therefore, replaced with the mean of the AL1 which was 5.39.

The frequency of missing answers for question CR4 was 1 data point, this constitutes 0.78% of all possible data points for CR4. As outlined in Section 4.4.2, the missing data was considered as MAR and was less than 3%. It was therefore replaced with the mean of the CR4 which was 4.91.

The frequency of missing answers for Question PI4 was 1 data point, this constitutes 0.78% of all possible data points for PI4. As outlined in Section 4.4.2, the missing data was considered as MAR and was less than 3%. It was, therefore, replaced with the mean of PI4 which was 5.95.

The mean for AL1, CR4 and PI4 was calculated by summing up all values for the question and dividing by the number of completed answers. For AL1, CR4 and PI4 there was a total of 127 completed responses each. The mean of AL1, CR4 and PI4 were calculated as follows.

$$AL1\ mean = (\sum_n^{127} AL1_n) / 127 = 5.39$$

$$CR4\ mean = (\sum_n^{127} CR4_n) / 127 = 4.91$$

$$PI4\ mean = (\sum_n^{127} PI4_n) / 127 = 5.95$$

5.4 SAMPLE DESCRIPTIVE ANALYSIS

The first section of the survey captured five demographic and sample descriptive data from participants: gender, age, highest level of education, years of entrepreneurial experience and the number of businesses owned. The sample descriptive analysis was conducted using the 128 valid participants.

5.4.1 Gender

Three categories were used to define gender: Male, Female and Prefer not to say. The gender breakdown is depicted in Figure 2.

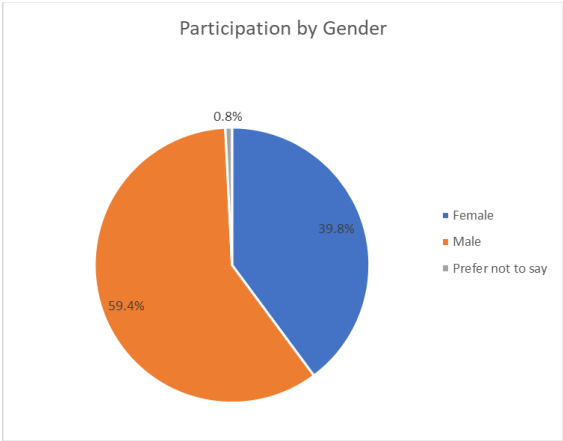


Figure 2: Participants by gender

The survey was male dominated, with 59.4% of participants male, 39.8% female and 0.8% preferring not to state their gender.

5.4.2 Age

Age was categorised into seven groups. 18–24 years old, 25–34 years old, 35–44 years old, 45–54 years old, 55–64 years old, 65–74 years old and older than 75 years. This is represented in Figure 3.

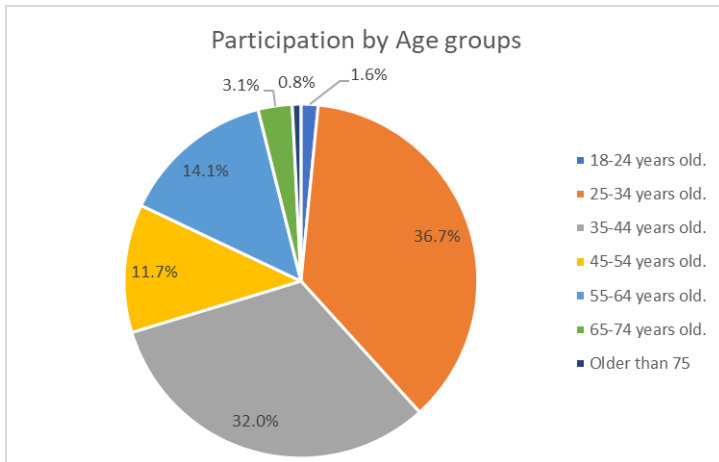


Figure 3: Participants by age groups

From the 128 valid participants, the four largest age groups in descending order were, 25–34 years old with 36.7% of the participants, 25–34 years old with 32% of participants, 55–64 years old with 14.1% of participants and 45–44 years old with 11.7% of participants. The remaining three were, 65–74 years old with 3.1% if participants, then 18–24 years old with 1.6% of participants and lastly older than 75 years old with 0.8% of participants. Ages 18 to 34 years old constitute 38.3% and 35 to 64 consisted of 57.8%.

5.4.3 Highest Level of Education

The highest level of education ranged from some high school education to doctoral degrees. In total, there were seven groups to select from.

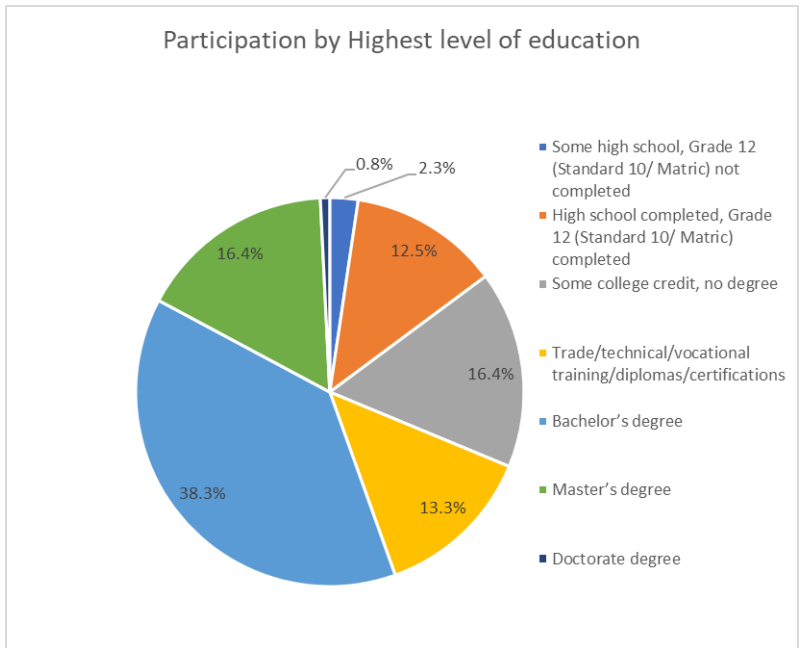


Figure 4: Participants by highest level of education

The majority of participants had a bachelor's degree, representing 38.3% of participants. The second largest groups had master's degrees and some college credits but no degree. Both these groups were equal in size with 16.4% of participants represented in each group. The fourth largest group were participants that had trade education, technical college education, vocational training, diplomas or other certifications: these represented 13.3% of participants. The fifth largest group were participants who had only completed high school (Grade 12/ matric), the remaining groups were participants who had not completed school and participants with a doctoral degree, who represented 2.3% and 0.8% respectively. This is represented in Figure 4. Furthermore, graduates consisted of 68.8% of participants while non-graduates consisted of only 31.2% of participants.

5.4.4 Years of Entrepreneurial Experience

Entrepreneurial experience was divided into five groups: 0–2 years' experience, 3–5 years' experience, 6–8 years' experience, 8–10 years' experience and more than 10 years' experience. This is depicted in Figure 5.

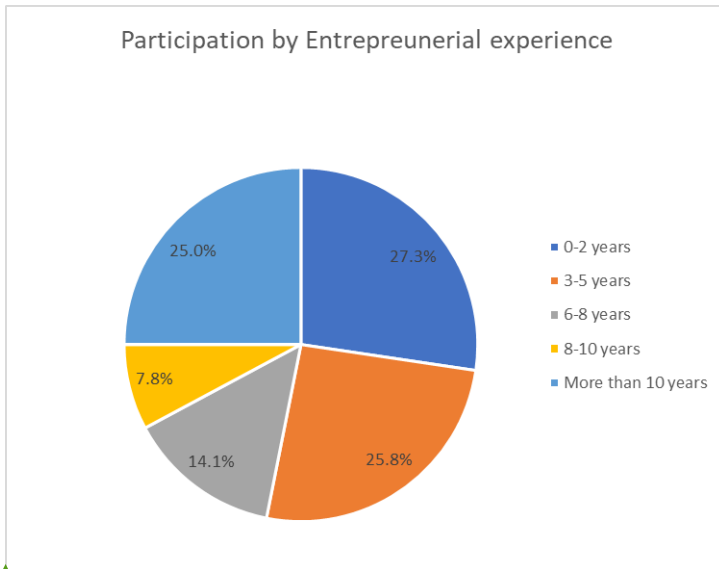


Figure 5: Participants by years of experience

The largest group represented was 0–2 years which represented 27.3% of participants, this was followed by 3–5 years' experience which represented 25.8% of participants. The third largest group was more than 10 years' experience: this group represented 25% of participants. The remaining groups were 6–8 years' experience which represented 14.1% of participants followed by 8–10 years' experience which represented 7.8% of participants.

5.4.5 Number of Businesses

Number of businesses was divided into five groups: 0–2 businesses, 3–5 businesses, 6–8 businesses, 8–10 businesses and more than 10 businesses. This is depicted in Figure 6.

Check spelling of entrepreneurial in the caption in the graph

Jax
11/24/2022 08:24
Resolved

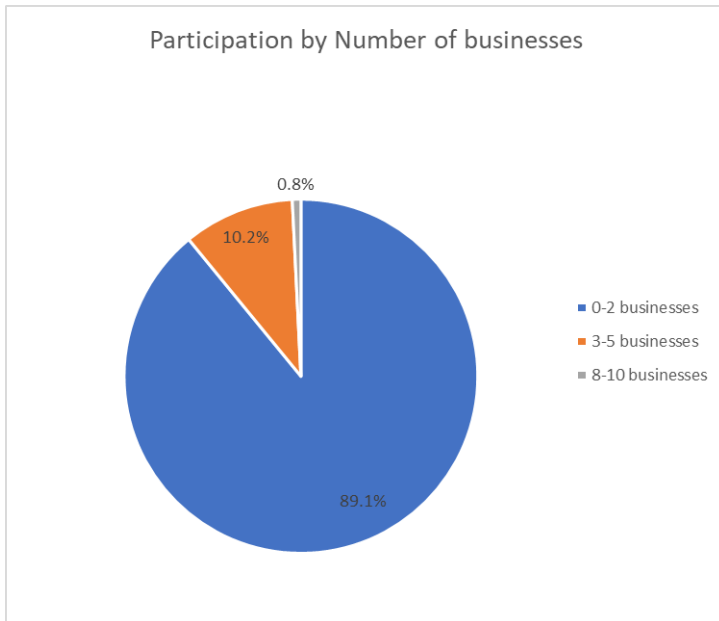


Figure 6: Participants by number of businesses

Two of the five groups had no representation from participants. These were the groups 6–8 businesses and more than 10 businesses. The largest group was 0–2 businesses, this represented 89.1% of participants, the was followed by the group with 3–5 business which represented 10.2% of participants and third was 8–10 businesses which represented 0.8% of businesses.

5.4.6 Summary of Sample Demographics

The data collected for gender was dominated by male participants (59.4%), the common age group was 25-34 years old (36.7%). The sample were predominately participants that had a bachelor's degree as the highest level of education (38.3%), while entrepreneurial experience was dominated by low levels of experience with the majority of participants falling into the category of 0–2 years of experiences (27.3%), this aligns to most participants owning 0–2 businesses (89.1%).

5.5 VALIDITY RESULTS

As discussed in Chapter 4, the validity of the constructs was tested using a bi-variate correlation. The relationship between the items/question and the total item (construct) score was determined by the Pearson's correlations. The item/question

was deemed valid if the correlation was stronger than 0.3 and the relationship was significant on the selected 95% level of confidence.

The results for the AL scale are shown in Table 9. The first item in the scale AL1 had a Pearson's correlation between AL1 and the AL construct of 0.556. This meant that AL1 was 55.6% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between AL2 and the AL construct was 0.573; this means that AL2 was 57.3% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between AL3 and the AL construct was 0.614; this means that AL3 was 61.4% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between AL4 and the AL construct was 0.692; this means that AL4 was 69.2% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between AL5 and the AL construct was 0.749; this means that AL5 was 74.9% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant on a 95% confidence level. The Pearson's correlation between AL6 and the AL construct was 0.621; this means that AL6 was 62.1% correlated to the AL construct. The p-value was less than 0.001; therefore, the relationship was found to be significant on a 95% confidence level.

All individual items in AL construct were significantly correlated to the total item, concluding that the questions were valid to measure the AL construct.

Table 9: Bi-variate correlation - Affordable loss (AL)

Item	Statistic	AL Total
AL1	Pearson Correlation	.556**
	Sig. (2-tailed)	<.001
	N	127
AL2	Pearson Correlation	.573**
	Sig. (2-tailed)	<.001
	N	127
AL3	Pearson Correlation	.614**
	Sig. (2-tailed)	<.001
	N	127
AL4	Pearson Correlation	.692**
	Sig. (2-tailed)	<.001
	N	127
AL5	Pearson Correlation	.749**
	Sig. (2-tailed)	<.001
	N	127
AL6	Pearson Correlation	.621**
	Sig. (2-tailed)	<.001
	N	127

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

**. Correlation is significant at the 0.05 level (2-tailed).*

The results for the BMI subconstruct value-creation innovation (CR) scale are shown in Table 10. The first item in the scale CR1 had a Pearson's correlation between CR1 and the CR construct of 0.739. This meant that CR1 was 73.9% correlated to the CR construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between CR2 and the CR construct was 0.714; this means that CR2 was 71.4% correlated to the CR construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between CR3 and the CR construct was 0.712; this means that CR3 was 71.2% correlated to the CR construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between CR4 and the CR construct was 0.686; this means that CR4 was 68.6% correlated to the CR construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level.

All individual items in CR construct were significantly correlated to the total item, concluding that the questions were valid to measure the CR construct.

Table 10: Bi-variate correlation - Value-creation innovation (CR)

Items	Statistics	CR Total
CR1	Pearson Correlation	.739**
	Sig. (2-tailed)	<.001
	N	127
CR2	Pearson Correlation	.714**
	Sig. (2-tailed)	<.001
	N	127
CR3	Pearson Correlation	.712**
	Sig. (2-tailed)	<.001
	N	127
CR4	Pearson Correlation	.686**
	Sig. (2-tailed)	<.001
	N	127

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

* . Correlation is significant at the 0.05 level (2-tailed).

The results for the BMI subconstruct value PI scale are shown in Table 11. The first item in the scale PI1 had a Pearson's correlation between PI1 and the PI construct of 0.808. This meant that PI1 was 80.8% correlated to the PI construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between PI2 and the PI construct was 0.775; this means that PI2 was 77.5% correlated to the PI construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between PI3 and the PI construct was 0.796; this means that PI3 was 79.6% correlated to the PI construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between PI4 and the PI construct was 0.580; this means that PI4 was 58% correlated to the PI construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level.

All individual items in PI construct were significantly correlated to the total item, concluding that the questions were valid to measure the PI construct.

Table 11: Bi-variate correlation - Value Proposition innovation (PI)

Items	Statistics	PI Total
PI1	Pearson Correlation	.808**
	Sig. (2-tailed)	<.001
	N	127
PI2	Pearson Correlation	.775**
	Sig. (2-tailed)	<.001
	N	127
PI3	Pearson Correlation	.796**
	Sig. (2-tailed)	<.001
	N	127
PI4	Pearson Correlation	.580**
	Sig. (2-tailed)	<.001
	N	127

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

**. Correlation is significant at the 0.05 level (2-tailed).*

The results for the BMI subconstruct value-creation innovation (CP) scale are shown in Table 12. The first item in the scale CP1 had a Pearson's correlation between CP1 and the CR construct of 0.825. This meant that CP1 was 82.5% correlated to the CP construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level. The Pearson's correlation between CP2 and the CP construct was 0.785; this means that CP2 was 78.5% correlated to the CP construct. The p-value was less than 0.001; therefore, the relationship was found to be significant at the 95% confidence level.

All individual items in CP construct were significantly correlated to the total item, concluding that the questions were valid to measure the CP construct.

Table 12: Bi-variate correlation - Value Capture innovation (CP)

Items	Statistics	CP Total
CP1	Pearson Correlation	.825**
	Sig. (2-tailed)	<.001
	N	127
CP2	Pearson Correlation	.785**
	Sig. (2-tailed)	<.001
	N	127

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

**. Correlation is significant at the 0.05 level (2-tailed).*

5.6 VARIABLE REDUCTION RESULTS

As discussed in Chapter 4, to conduct descriptive statistics the questions relating to the measurement scales were coded from the 7-point Likert scale to numerical values. Exploratory factor analysis was conducted as a variable reduction technique to enable the grouping of questions for analysis. First, the correlation matrix was analysed to determine a relationship between the items of the construct (see Table 13 and Table 14); second, the KMO and Bartlett's tests were conducted with results shown in Tables 15 and 16. Thereafter, the eigenvalues were used to determine the number of components that exist within the construct (see Table 17) and lastly the new components were grouped as per results from the rotated component matrix (see Table 20).

5.6.1 Affordable Loss Correlation Matrix

The correlation matrix displays the results of each item in the scale (Table 13 and Table 14). AL1 had two Pearson's correlations value above 0.3. The relationship between AL1 and AL2 was 0.463 and the relationship between AL1 and AL3 was 0.344. Therefore AL1, AL2 and AL3 had at two correlations above 0.3 and these items were regarded as valid. AL4 had one Pearson's correlation value above 0.3. The relationship between AL4 and AL5 was 0.624, therefore AL4 and AL5 were regarded as valid. AL6 had one Pearson's correlation value above 0.3. The relationship between AL6 and AL5 was 0.383. Therefore, AL5 and AL6 were regarded as valid.

Table 13: Correlation matrix of AL items

Correlation Matrix - AL							
		AL1	AL2	AL3	AL4	AL5	AL6
Correlation	AL1	1	0.463	0.344	0.101	0.171	0.128
	AL2	0.463	1	0.305	0.187	0.215	0.243
	AL3	0.344	0.305	1	0.28	0.316	0.263
	AL4	0.101	0.187	0.28	1	0.624	0.287
	AL5	0.171	0.215	0.316	0.624	1	0.383
	AL6	0.128	0.243	0.263	0.287	0.383	1

5.6.2 Business Model Innovation Correlation Matrix

Item CR1 had Pearson's correlation value of 0.3 or higher for five items. These items were CR2, CR3, CR4, CR5, PI1 and PI3. CR1 and CR2 had a Pearson's correlation of 0.425, CR1 and CR3 had a Pearson's correlation of 0.383, CR1 and

CR4 had a Pearson's correlation value of 0.369, CR1 and PI1 had a Pearson's correlation of 0.388 and CR1 and PI3 had a Pearson's correlation of 0.3. Item PI2 had four Pearson's correlation values above 0.3; these were with items PI1, PI3, PI4 and CP1. PI2 and PI1 had a Pearson's correlation value of 0.537. PI2 and PI1 had a Pearson's correlation value of 0.537; hence, PI2 and PI1 were regarded as valid items. PI2 and PI3 had a Pearson's correlation value of 0.412; hence, PI3 was regarded as a valid item as determined in above. PI2 and PI4 had a Pearson's correlation value of 0.304; hence, PI4 was regarded as a valid item. PI2 and CP1 had a Pearson's correlation value of 0.304, hence CP1 was regarded as a valid item. CP2 had one Pearson's correlation value of 0.3 or higher; this was for item CR3; hence, CP2 was regarded as valid.

Table 14: Correlation matrix of BMI items

Correlation Matrix - BMI											
	CR1	CR2	CR3	CR4	PI1	PI2	PI3	PI4	CP1	CP2	
Correlation	CR1	1.000	.425	.383	.369	.388	.251	.107	.271	.006	.300
	CR2	.425	1.000	.430	.183	.332	.287	.199	.200	.134	.376
	CR3	.383	.430	1.000	.294	.402	.243	.409	.364	.378	.529
	CR4	.369	.183	.294	1.000	.213	.176	.206	.313	-.017	.212
	PI1	.388	.332	.402	.213	1.000	.537	.261	.299	.200	.570
	PI2	.251	.287	.243	.176	.537	1.000	.304	.304	.056	.412
	PI3	.300	.376	.529	.212	.570	.412	.319	.437	.238	1.000
	PI4	.107	.199	.409	.206	.261	.304	1.000	.339	.284	.319
	CP1	.271	.200	.364	.313	.299	.304	.339	1.000	.298	.437
	CP2	.006	.134	.378	-.017	.200	.056	.284	.298	1.000	.238

5.6.3 Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity

The results from the KMO and Bartlett's test of sphericity were analysed for both AL and BMI. A KMO value greater than 0.5 and a confidence level of 95% for the Bartlett's test of sphericity were used to determine if EFA could be carried out on the constructs.

The construct AL produced a KMO value of 0.691; this value was greater than 0.5. The Bartlett's test of sphericity had a p-value less than 0.001; therefore, the test was significant at a 95% level of confidence. This concluded that EFA could be conducted on the construct AL. The result for tests on the AL constructed are shown in Table 15.

Table 15: Results of KMO and Bartlett's test for AL

KMO and Bartlett's Test – Affordable Loss			
Kaiser-Meyer-Olkin Adequacy	Measure of Sampling		.691
Bartlett's Sphericity	Test of Approx. Chi-Square		153.086
	df		15
	Sig.		<.001

The construct AL produced a KMO value of 0.80; this value was greater than 0.5. The Bartlett's test of sphericity had a p-value less than 0.001; therefore, the test was significant at a 95% level of confidence. This concluded that EFA could be conducted on the construct BMI. The result for tests on the BMI constructed are shown in Table 16.

Table 16: Results of KMO and Bartlett's test for BMI

KMO and Bartlett's Test – Business model innovation			
Kaiser-Meyer-Olkin Adequacy	Measure of Sampling		.800
Bartlett's Sphericity	Test of Approx. Chi-Square		338.376
	df		45
	Sig.		<.001

5.6.4 Determining the Components for the Constructs

As discussed in Section 4.4.8, the total variance and eigenvalue indicate the number of components that form the construct.

The total variance for AL is indicated in Table 17. The total number of components for AL as indicated by the cumulative total variance and eigenvalue were determined to be reduced to two. At two components the total cumulative total variance explained for AL was 61.51%, thus greater than 60% and the eigenvalue was closer to 1 but greater than 1.

Table 17: Total variance explained for AL

Total Variance Explained - AL						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.453	40.880	40.880	2.453	40.880	40.880
2	1.238	20.633	61.514	1.238	20.633	61.514
3	.754	12.562	74.075			
4	.682	11.362	85.437			
5	.514	8.565	94.002			
6	.360	5.998	100.000			

As determined above AL is reduced to two components. Component 1 for AL comprises of items AL1, AL2 and AL3. These items had the highest absolute values for component 1. This is indicated by the rotated component matrix shown in Table 18. Based on the characteristics of this component, the component was named investment risk consideration.

Component 2 for AL comprises of items AL4, AL5 and AL6. These items had the highest absolute values for component 2. This is indicated by the rotated component matrix shown in Table 18. Based on the characteristics of this component, the component was named investment opportunities.

Table 18: Rotated Component Matrix

Rotated Component Matrix ^a		
Item	Component	
	1	2
AL1	.003	.847
AL2	.143	.786
AL3	.382	.568
AL4	.843	.038
AL5	.859	.122
AL6	.598	.210

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation. ^a

a. Rotation converged in three iterations.

The total variance for BMI is indicated in Table 19. The total number of components for BMI as indicated by the cumulative total variance and eigenvalue was reduced to three. At three components, the total cumulative total variance explained for BMI was 60.19%, thus greater than 60% and the eigenvalue was closer to 1 but greater than 1.

Table 19: Total variance explained for BMI

Total Variance Explained - BMI						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.752	37.516	37.516	3.752	37.516	37.516
2	1.262	12.619	50.135	1.262	12.619	50.135
3	1.005	10.055	60.190	1.005	10.055	60.190
4	.921	9.208	69.399			
5	.715	7.151	76.549			
6	.588	5.880	82.429			
7	.558	5.575	88.004			
8	.499	4.986	92.990			
9	.388	3.883	96.873			
10	.313	3.127	100.000			

As determined above BMI was reduced to three components. Component 1 for BMI comprises of items CR2, PI1, PI2 and PI3. These items had the highest absolute values for component 1. This is indicated by the rotated component matrix shown in Table 20. Based on the characteristics of this component, the component was named learning and partnership innovation. Component 2 for BMI comprises of items CR3, PI4, CP1 and CP2. These items had the highest absolute values for component 2. This is indicated by the rotated component matrix shown in Table 20. Based on the characteristics of this component, the component was named structure and customer development innovations. Component 3 for BMI comprises of items CR1 and CR4. These items had the highest absolute values for component 3. This is indicated by the rotated component matrix shown in Table 20. Based on the characteristics of this component, the component was named customer segment innovations.

Table 20: Rotated component matrix

Rotated Component Matrix ^a			
Items	Component		
	1	2	3
CR1	.338	-.018	.741
CR2	.450	.149	.430
CR3	.293	.614	.410
CR4	-.027	.134	.807
PI1	.801	.198	.164
PI2	.817	.071	.049
PI3	.639	.420	.201
PI4	.210	.645	.094
CP1	.205	.571	.338
CP2	.004	.813	-.159

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalisation. ^a

a. Rotation converged in five iterations

The six items of AL were reduced to investments risk considerations and investment opportunities. The ten items of BMI were reduced to three components: learning and partnership innovation, structure and customer development innovations and customer segment innovations.

5.7 RELIABILITY RESULTS

To establish the reliability of the constructs, the Cronbach alpha was calculated and assessed for each measurement scale of the study: Affordable loss (AL), Value-creation innovation (CR), value PI and value capture innovation (CP).

The Cronbach's Alpha was calculated to be 0.70 for the AL measurement scale. This was greater than the required 0.65 to establish reliability of the scale. The results are shown in Table 21.

Table 21: Reliability statistics – AL

Reliability Statistics – AL		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.70	0.70	6

The Cronbach's Alpha was calculated to be 0.66 for the CR measurement scale. This was greater than the required 0.65 to establish reliability of the scale. The results are shown in Table 22.

Table 22: Reliability statistics – CR

Reliability Statistics – CR		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.66	0.68	4

The Cronbach's Alpha was calculated to be 0.73 for the PI measurement scale. This was greater than the required 0.65 to establish reliability of the scale. The results are shown in Table 23.

Table 23: Reliability statistics – PI

Reliability Statistics - PI		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.73	0.73	4

The Cronbach's Alpha was calculated to be 0.46 for the CP measurement scale. This was not greater than the required 0.65 to establish reliability of the scale. Because the scale consisted of only two items, no further question could be removed. Thus the CP scale was determined to be unreliable. The results are shown in Table 24.

Table 24: Reliability statistics – CP

Reliability Statistics - CP		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.46	0.46	2

5.8 DESCRIPTIVE STATISTICS ON NEW COMPONENTS

The descriptive statistics were conducted on the reduced components formed the EFA. The results of the descriptive statistics are shown in Table 25.

Table 25: Descriptive statistics

Descriptive Statistics of new components						
	Investment Risk Considerations	Investment Opportunities	Learning and Partnership Innovation	Structure and customer development innovations	Customer segment innovations	Valid N (listwise)
N	127	127	127	127	127	127
Minimum	1	1	1.75	2	1	
Maximum	7	7	7	7	7	
Mean	5.75	5.2	5.19	5.59	5.27	
Mode	6.33	7	6	6	6	
Median	6	5.67	5.5	6	6	
Std. Deviation	1.09	1.47	1.36	1.13	1.56	
Skewness	Statistic	-1.72	-0.66	-0.73	-1	-1
	Std. Error	0.214	0.215	0.214	0.214	0.214
Kurtosis	Statistic	4.38	-0.495	-0.188	-0.014	-0.502
	Std. Error	0.425	0.427	0.425	0.425	0.425

5.8.1 Investment Risk Consideration Descriptive Statistic

Participants' input on investment considerations ranged between 1 and 7. The mean score of was 5.75; thus, participants tended to agree. The mode was 6.33 and median was 6. The standard deviation was 1.09. The skewness statistic of the distribution was -1.72 , this showed that the distribution was left-tailed, indicating that the data was not normally distributed. The kurtosis statistic was 4.38.

5.8.2 Investment Opportunities Descriptive Statistic

Participants input on investment considerations ranged between 1 and 7. The mean score of was 5.2, thus participants tended towards partially agree. The mode was 7 and median was 5.67. The standard deviation was 1.47. The skewness statistic of the distribution was -0.66 , this showed that the distribution was left-tailed, indicating that the data was not normally distributed. The kurtosis statistic of distribution was -0.495 .

5.8.3 Learning and Partnership Innovation Descriptive Statistic

Participants input on investment considerations ranged between 1.75 and 7. The mean score of was 5.19, thus participants tended towards agree. The mode was 6 and median was 5.5. The standard deviation was 1.36. The skewness statistic of the distribution was -0.73 , this showed that the distribution was left-tailed, indicating that the data was not normally distributed. The kurtosis statistic of distribution was -0.188 .

5.8.4 Structure and Customer Development Innovations Descriptive Statistic

Participants input on investment considerations ranged between 2 and 7. The mean score of was 5.59, thus participants tended towards agree. The mode was 6 and median was 6. The standard deviation was 1.13. The skewness statistic of the distribution was -1.72 , this showed that the distribution was left-tailed, indicating that the data was not normally distributed. The kurtosis statistic of distribution was -0.014 .

5.8.5 Customer Segment Innovations Descriptive Statistic

Participants input on investment considerations ranged between 1 and 7. The mean score of was 5.27, thus participants tended towards agree. The mode was 6 and median was 6. The standard deviation was 1.56. The skewness statistic of the distribution was -1.72 ; this showed that the distribution was left-tailed, indicating that the data was not normally distributed. The kurtosis statistic of distribution was -0.502 .

5.9 DESCRIPTIVE STATISTICS OF HYPOTHESES CONSTRUCTS

Before testing the hypothesis, a descriptive analysis of each construct was conducted. This was done to gain an understanding of the constructs before testing the hypotheses.

5.9.1 Affordable Loss Descriptive Statistics

The AL construct was formed by items AL1, AL2, AL3, AL4, AL5 and AL6 as discussed in section 4.3.4.2. The mean score for AL was 5.48; thus, participants tended towards agreeing with applying the affordable loss principle when times are uncertain. The median was 5.67; thus, the 50th percentile was 5.67. This is close to the mean score. The standard deviation for the construct was 1.05. Majority of participants agreed with applying AL - 82% of participants had a score of 4 or greater. The scores ranged from 1 to 7, therefore a spread of 6 units. The distribution was negatively skewed with a value of -1.11 and kurtosis was 1.99. Results are depicted in Table 26.

Table 26: Descriptive statistics on hypotheses constructs

	AL	CR	PI	CP
Mean	5.48	5.29	5.4	5.46
Median	5.67	5.67	5.50	5.50
Variance	1.10	1.70	1.56	1.85
Std. Deviation	1.05	1.30	1.25	1.36
Minimum	1.00	1.50	2.00	2.00
Maximum	7.00	7.00	7.00	7.00
Range	6.00	5.50	5.00	5.00
Skewness	-1.11	-0.72	-0.74	-0.39
Kurtosis	1.99	-0.08	0.10	-0.91

5.9.2 Value-Creation Innovation Descriptive Statistics

The CR construct was formed by items CR1, CR2, CR3 and CR4 as discussed in section 4.3.4.3. The mean score for CR was 5.29; thus, participants tended towards agreeing with implementing value-creation innovations within their businesses in the last year. The median was 5.67; thus, the 50th percentile was 5.67. This is close to the mean score. The standard deviation for the construct was 1.30. The scores ranged from 1.5 to 7, a spread of 5.5 units. The distribution was negatively skewed with a value of -0.72 and kurtosis was -0.08 . Results for the construct are depicted in Table 27.

Table 27: Tests of normality

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
AL Average	.126	127	<.001	.930	127	<.001
CR Average	.138	127	<.001	.936	127	<.001
PI Average	.131	127	<.001	.931	127	<.001
CP Average	.176	127	<.001	.897	127	<.001

a. Lilliefors Significance Correction

5.9.3 Value Proposition Innovation Descriptive Statistics

The PI construct was formed by items PI1, PI2, PI3 and PI4 as discussed in section 4.3.4.3. The mean score for PI was 5.4; thus, participants tended towards agreeing with implementing value proposition innovations within their businesses in the last year. The median was 5.5; thus, the 50th percentile was 5.5. This is close to the mean score. The standard deviation for the construct was 1.25. The scores ranged

from 2 to 7, a spread of 5 units. The distribution was negatively skewed with a value of -0.74 and kurtosis was 0.10 . Results for the construct are depicted in Table 27.

5.9.4 Value Capture Innovation Descriptive Statistics

The CP construct was formed by items CP1 and CP2 as discussed in section 4.3.4.3. The mean score for CP was 5.46 ; thus, participants tended towards agreeing with implementing value capture innovations within their businesses in the last year. The median was 5.5 ; thus, the 50th percentile was 5.5 . This is close to the mean score. The standard deviation for the construct was 1.36 . The scores ranged from 2 to 7, a spread of 5 units. The distribution was negatively skewed with a value of -0.39 and kurtosis was -0.91 . Results for the construct are depicted in Table 27.

5.9.5 Test for Normality Results

Test of normality were conducted for each of the constructs. Both the Kolmogorov-Smirnova and Shapiro-Wilk tests were done to test normality at a 95% level of confidence. The results are depicted in Table 27.

The Kolmogorov-Smirnova tests for AL resulted in a p-value less than 0.001 which is less than the 0.05 . Therefore, the null hypothesis of normality was rejected. There were similar results for the Shapiro-Wilk test. The p-value was less than 0.001 and therefore less than 0.05 . Hence, the null hypothesis of normality was rejected.

The Kolmogorov-Smirnova tests for CR resulted in a p-value less than 0.001 which is less than the 0.05 . Therefore, the null hypothesis of normality was rejected. There were similar results for the Shapiro-Wilk test. The p-value was less than 0.001 and therefore less than 0.05 . Hence, the null hypothesis of normality was rejected.

The Kolmogorov-Smirnova tests for PI resulted in a p-value less than 0.001 which is less than the 0.05 . Therefore, the null hypothesis of normality was rejected. There were similar results for the Shapiro-Wilk test. The p-value reported was less than 0.001 and therefore less than 0.05 . Hence, the null hypothesis of normality was rejected.

The Kolmogorov-Smirnova tests for CP resulted in a p-value less than 0.001 which is less than the 0.05. Therefore, the null hypothesis of normality was rejected. There were similar results for the Shapiro-Wilk test. The p-value reported was less than 0.001 and therefore less than 0.05. Hence, the null hypothesis of normality was rejected.

5.10 RESULTS OF HYPOTHESIS TESTING

The research sought to answer the research question: what is the impact of AL on BMI? It was therefore hypothesised that each construct of BMI has a relationship with AL. The first hypothesis was: there is a positive relationship between AL and value-creation innovation. The second hypothesis was: there is a positive relationship between AL and value proposition innovation. The third hypothesis was: there is a positive relationship between AL and value capture innovation. Each of the hypotheses were tested using Pearson’s correlation to determine a relationship and the strength of the relationship was assessed using Cohen’s D interpretation of the strength.

5.10.1 Hypothesis 1

A scatter plot was used to visually assess if there was a relationship between the AL construct and CR. Each dot on the scatter plot represents the response of a single participant. The X-axis represents AL and the Y-axis represents CR. The dots on the scatter plot (Figure 7) are widely distributed. Based on the visual representation of the dots between the x-axis and Y-axis, there seems to be no relationship between the two constructs.

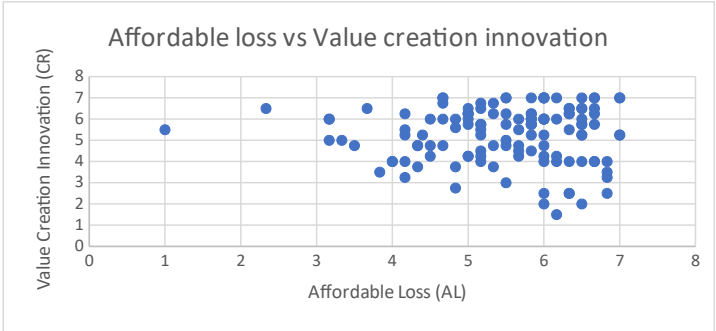


Figure 7: Scatter plot for affordable loss vs value creation innovation

As shown in Figure 7, the Pearson's correlation value between AL and CR was – 0.004, thus falling below the Cohen's D threshold of 0.1 and indicating no relationship between the two constructs. The p-value was 0.96, thus above 0.05, indicating no significant relationship between AL and CR.

Table 28: Correlations

Correlations			
		AL Average	CR Average
AL Average	Pearson Correlation	1	-.004
	Sig. (2-tailed)		.960
	N	127	127
CR Average	Pearson Correlation	-.004	1
	Sig. (2-tailed)	.960	
	N	127	127

5.10.2 Hypothesis 2

A scatter plot was used to visually assess if there was a relationship between the AL construct and CR. Each dot on the scatter plot represents the response of a single participant. The X-axis represents AL and the Y-axis represents PI. The dots on the scatter plot (Figure 8) are widely distributed. Based on the visual representation of the dots between the x-axis and Y-axis, there seems to be no relationship between the two constructs.

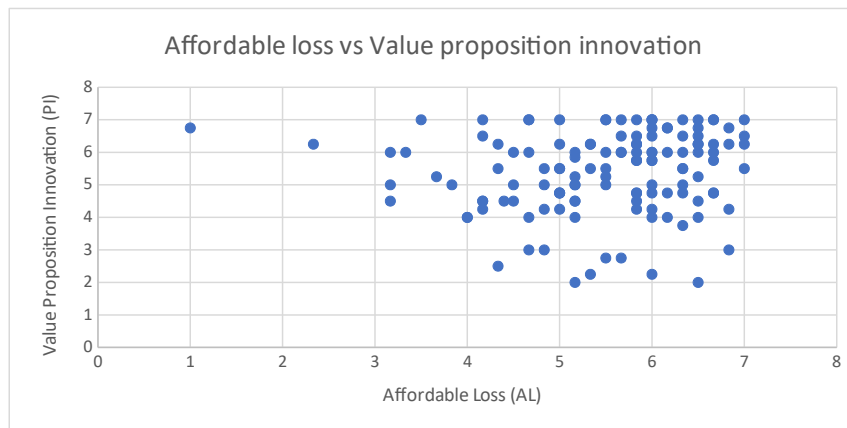


Figure 8: Scatter plot: Affordable loss vs value proposition innovation

As shown in Table 29, the Pearson's correlation value between AL and PI was 0.091, thus falling below the Cohen's D threshold of 0.1 and indicating not relationship between the two constructs. The p-value was 0.306, thus above 0.05, indicating no significant relationship between AL and PI.

Table 29: Correlations

		AL	PI
		Average	Average
AL Average	Pearson Correlation	1	.091
	Sig. (2-tailed)		.306
	N	127	127
PI Average	Pearson Correlation	.091	1
	Sig. (2-tailed)	.306	
	N	127	127

5.10.3 Hypothesis 3

A scatter plot was used to visually assess if there is a relationship between the AL construct and CR. Each dot on the scatter plot represents the response of a single participant. The X-axis represents AL, and the Y-axis represents CP. The dots on the scatter plot (Figure 9) are widely distributed. Based on the visual representation of the dots between the x-axis and Y-axis, there seems to be no relationship between the two constructs.

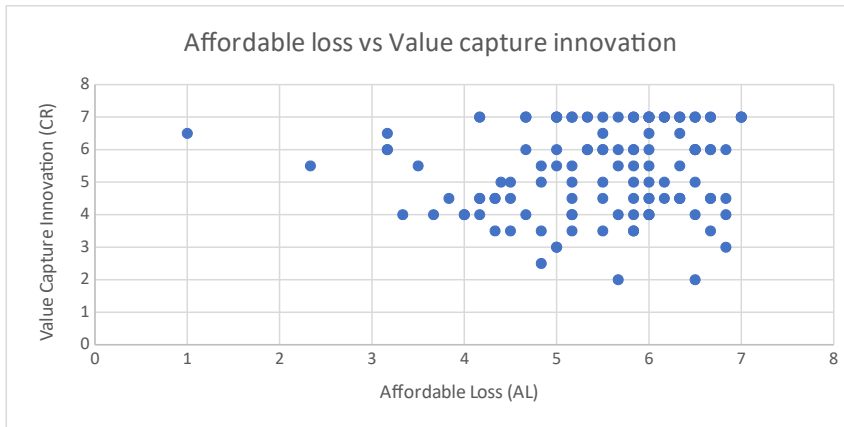


Figure 9: Scatter plot: Affordable loss vs value capture innovation

As shown in Table 30, the Pearson’s correlation value between AL and CP was 0.112, thus indicating a weak relationship between the two constructs. The p-value was 0.208, thus above 0.05, indicating no significant relationship between AL and CP.

Table 30: Correlations

		Correlations	
		AL Average	CP Average
AL Average	Pearson Correlation	1	.112
	Sig. (2-tailed)		.208
	N	127	127
CP Average	Pearson Correlation	.112	1
	Sig. (2-tailed)	.208	
	N	127	127

CHAPTER 6: DISCUSSION OF RESEARCH RESULTS

6.1 INTRODUCTION

This chapter presents an interpretation of the results outlined in Chapter 5. First the summary of results is given followed by a discussion of data collection. Thirdly, the results of the descriptive statistics will be discussed, and finally the results of the hypotheses will be discussed.

6.2 SUMMARY OF RESULTS

Table 31 presents a summary table of the results in Chapter 5.

Table 31: Chapter 5 results summary

Section	Subsection	Summary
Pretesting	Pretesting and survey response rate	Pretesting was conducted by 3 participants. The pre-test results were excluded from the data
Data cleaning	Data cleaning and sample size	In total, 141 participants completed the survey. Due to participants not meeting the requirements of an SA entrepreneur and incomplete questions answered, 14 responses were removed from the analysis.
Sample descriptive analysis	Gender	The majority of participants were male. With fewer than ~40% female.
	Age	The majority of participants were above the age of 35.
	Highest level of education	Approximately 69% of participants were graduates.
	Years of entrepreneurial experience	53.1% of participants had less than 5 years' experience of being an entrepreneur.
	Number of businesses	89% of participants owned less than 2 businesses

Section	Subsection	Summary
Validity	Validity	All constructs were found to be valid
	Variable reduction	AL was reduced to 2 components: Investment Risk Considerations and Investment Opportunities. BMI was reduced to three components: Learning and Partnership Innovation, Structure and customer development Innovations and Customer segment innovations
Reliability	Reliability of scales	AL, CR and CP were found to be reliable with Cronbach alpha scores above 0.65. PI had a score less than 0.65 therefore not reliable.
Descriptive statistics on new components	Investment risk considerations	Participants tend towards strongly agreeing.
	Investment opportunities consideration	Participants tend towards agreeing.
	Learning and partnership innovation	Participants tend towards agreeing.
	Structure and customer development innovations	Participants tend towards strongly agreeing.
	Customer segment innovations	Participants tend towards agreeing.
Descriptive statistics of hypotheses constructs	Affordable loss	Participants tended towards agreeing. Distribution was negatively skewed. High kurtosis. 82% of Participants agreeing or higher
	Value creation innovation	Participants tended towards agreeing. Distribution was negatively skewed.
	Value proposition	Participants tended towards agreeing.

Section	Subsection	Summary
	innovation	Distribution was negatively skewed.
	Value capture innovation	Participants tended towards agreeing. Distribution was negatively skewed.
	Tests for normality	All constructs were not normally distributed
Hypotheses testing	Hypothesis 1	Not supported. No relationship between AL and CR.
	Hypothesis 2	Not supported. No relationship between AL and PI
	Hypothesis 3	Not supported. No relationship between AL and CP.

6.2.1 Pretesting Results

Pretesting was conducted by three entrepreneurs. This is an inadequate number of pretests as advised by Perneger et al. (2015) as the default number of pretesting should be 30 participants. The three pre-testers were well-experienced entrepreneurs which meant that they could have been better acquainted with the questionnaire constructs before completing the questionnaire. As outlined in the sample descriptive statistics, the majority of participants were inexperienced entrepreneurs. Therefore, it was expected that conducting the pretesting with experienced entrepreneurs would have added more value and better suited the study.

6.2.2 Data Cleaning and Sample Size

The total number of participants for the study was 141. This was reduced by to 127 participants due to the removal of entries as outlined in the data cleaning process in Chapter 4 and 5.

To adequately conduct sample statistics a minimum sample of size of 119 was suggested by Bartlett et al. (2001). However, other studies such as Taherdoost (2017) suggest a sample of 384. The average sample size according to a metanalytical review by Zhang et al. (2021), the average sample size on BMI studies was calculated to be 242. Based on this, the sample of 127 met the minimum sample size, however, the guidance by past research indicate that an adequate sample size would be approximately 240 or higher as suggested by

Taherdoost (2017). The study's sample size was therefore insufficient for reliable results.

6.2.3 Sample Descriptive Analysis Results

Participants were asked five questions that captured the demographics and entrepreneurial levels of participants.

The sample data collected were predominantly male participants with 59.4% and 39.8% female. This results in a gender gap ratio of 0.67 ($39.8\% / 59.4\% = 0.67$). Results from the Global Entrepreneurship Monitoring report for 2021 and 2022 reported a gender gap ratio for SA of 0.8. It can be deduced that a higher proportion of males completed the questionnaire than females, this is higher proportion than expected based on results from GEM (2022).

According to the GEM (2022), the entrepreneurship population was predominantly in the group 18 to 34 years old. The age gap ratio between 18 to 34 years old to 35 to 64 was approximately 1.3 ($18\text{ to }34/35\text{ to }64 = \text{age gap ratio}$). When comparing to the sample collected in the study, group 18 to 34 made up 38.3% of the population while 35 to 64 accounted for 57.8%. The age gap ratio for the sample was 0.66. This was a 0.64 difference. The proportion of participants between 35 to 64 dominated the data collected. This is indicative of sample bias caused by the snowballing methodology – the researcher's networks were predominantly in the age group 35 to 44 years old.

The data collected on education level was grouped into seven groups, ranging from high school to doctoral degrees. The data was grouped into two distinct groups, graduate and non-graduates. The graduates consisted of 68.8% of participants while non-graduates consisted of only 31.2% of participants; thus, more than twice as many graduates compared to non-graduates. When comparing this to the GEM (2022) report, South Africa entrepreneurs have approximately a 50% split between graduates and non-graduates. The result differs from the population as reported by GEM (2021) which is indicative of a sample bias in the data collected.

To assess the level of experience the participant has as an entrepreneur, two questions were captured: the number of businesses owned and the years of experience as an entrepreneur. The number of businesses owned by the participants were predominantly 0–2 businesses, with only 11% of participants owning more than two businesses. The years of entrepreneurial experience

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consisted of three large groups, 0–2 years, 3–5 years and more than 10 years. The majority of the sample had less five or less years' experience which represented 53.1% of participants. The sample data of participants were inexperienced entrepreneurs with two or less businesses and five or less years' experience as an entrepreneur.

In summary, the sample analysis depicts that the data collected did not align with the population, particularly on age and education level. The representation of gender had a closer representation to the population. These differences arose from sample bias from the snowballing data collection method. In addition, the participants were inexperienced entrepreneurs.

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6.3 RESEARCH QUESTION AND HYPOTHESIS TESTING

With the literature outlined in Chapter 2, the researcher formulated a research question that sought to understand the impact of affordable loss on BMI. To adequately answer the research question from literature, three hypotheses were formed: H1: There is a positive relationship between AL and value creation innovation; H2: There is a positive relationship between AL and value proposition innovation; and H3: There is a positive relationship between AL and value capture innovation.

The rest of the chapter presents an analysis of the constructs found in the descriptive analysis. Thereafter, the results of each hypothesis are discussed followed by the combined interpretation of the results for all three hypotheses in accordance with literature and a conclusion.

6.3.1 Affordable Loss Descriptive Analysis Results

The AL construct had a median of 5.67 and a mean score of 5.48. Based on the mean score, participants tended towards agreeing with applying the AL principle. The distribution of results did not fit a normal distribution with the skewness value of -1.11 indicating that the distribution was not asymmetrical and was negatively skewed towards the right of the distribution (i.e., most of participants were on the right side of the distribution) and the kurtosis value of 1.99 indicated that the distribution was tightly centred around the mean and median. Results from the Shapiro-Wilk and Kolmogorov-Smirnov tests for normality confirmed that the distribution of the data collected for AL was not normally distributed.

The results of the EFA reduced the items of AL into two new components which were named investment risk considerations and investment opportunities. The mean for investment risk consideration was 5.75 with the mode being 6.33, whereas investment opportunities had a lower mean and mode of 5.2 and 7 respectively. Participants tended towards strongly agreeing with assessing investment risk consideration whereas assessing investment opportunities participants tended towards agree. The distribution of the two components was negatively skewed with a greater level of negative skewness for investment risk consideration.

6.3.2 Business Model Innovation Descriptive Analysis Results

Data on BMI was collected using the scale developed by Clauss (2017). Clauss (2017) found that BMI has three formative constructs: value-creation innovation, value-proposition innovation and value-capture innovation.

Participants tended towards agreeing with innovating within value-creation activities of BMI within the last year. The results were the same for value-proposition innovation and value-capture innovation. All three of the subconstructs did not fit a normal distribution. This was confirmed by the results from the Shapiro-Wilk and Kolmogorov-Smirnov tests of normality.

EFA was conducted on the BMI. The 10 items of the scale were reduced to three items, namely, learning and partnership innovation, structure and customer development innovation and customer segment innovation. The mean score of participants for learning and partnership innovation, and structure and customer development innovation were 5.2 and 5.19; therefore, participants tended towards agreeing with innovating these aspects of their BMs. Results for customer segment innovation had a mean score of 5.59 which meant that participants tended towards strongly agreeing with innovation customer segments.

6.3.3 H1: There is a positive relationship between AL and value creation innovation

The scatter plot (Figure 7) indicated that there was no clear visual relationship between the two constructs. It can also be observed that most participants were on the right of the plot indicating high levels of AL as discussed above in the descriptive statistics analysis. The visual observations were confirmed with results from the Pearson's correlation analysis which had a value of -0.004 . According to

Cohen D's interpretation of the Pearson's correlation coefficient, there is no relationship between AL and CR. The p-value of 0.96 statistically confirmed that there was no significant relationship between AL and CR. The hypothesis of AL having a positive relationship with value-creation innovation was not supported.

6.3.4 H2: There is a positive relationship between affordable loss and value proposition innovation

The scatter plot (Figure 8) showed that most participants were towards the upper end of the PI axis and the right of the AL axis as discussed in the descriptive statistics above. There was no visual indication of a relationship between the two constructs. The Pearson's correlation value was below 0.10 indicating no relationship between AL and CR. The p-value was 0.306 statistically confirming no relationship between the two constructs. The hypothesis of AL having a positive relationship with value-proposition innovation was not supported.

6.3.5 H3: There is a positive relationship between affordable loss and value capture innovation

The scatter plot (Figure 9) indicated that most participants were towards the upper end of the PI axis as discussed in the descriptive statistics above. There was no visual indication of a relationship between the two constructs. The Pearson's correlation value was above 0.10 indicating a weak relationship between AL and CR. The p-value was 0.208, which was greater than 0.05, therefore statistically confirming no relationship between the two constructs. The hypothesis of AL having a positive relationship with value-capture innovation was not supported.

6.4 RESEARCH QUESTION RELATED TO LITERATURE

The development of the research question and hypothesis was based on the literature findings on the relationship between effectuation and innovation or BMI and the relationship between AL and innovation. The study sought to answer the research question: What is the impact of AL on BMI amongst SA entrepreneurs? BMI has three formatives constructs: value-creation innovation, value-proposition innovation and value-capture innovation (Clauss, 2017). The relationship of AL with each of the subconstructs was tested individually and the outcomes of the hypothesis were combined to answer the research question.

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The results of the hypothesis testing conducted did not support H1, H2 and H3. Therefore, it was found that AL has no impact on BMI amongst SA entrepreneurs. However, the findings could be expected due to the is contrary views in literature.

Previous literature indicated that AL would have a positive impact on the innovation of a firm and BMI (Brettel, 2012; Futterer et al., 2018; Szambelan & Jiang, 2020). However, there were studies (Roach et al., 2016; Smokla et al., 2018) that indicated that AL had negative impact on firms' performance while Pati et al. (2021) found that BMI was negatively impacted by AL. Pati et al. (2021) posited that AL restricts the firm which ultimately results in lack of performance and innovation and Dew et al. (2009) and Smokla et al. (2018) argued that entrepreneurs using the AL principle focus more on the risk and not the opportunity at hand. The entrepreneur thus seeks risk avoidance which leads to poor performance of the firm.

The multiple stages of entrepreneurship also explain the difference between literature and the findings of this study. An et al., (2020),Pati et al. (2021) and Smokla et al. (2018) hypothesised that in the start-up phase of a business, AL loss will be greater assistance to reduce the risk associated of starting a business, lowering the downside risk limits resources and which will lead to an increase BMI. Brettel et al. (2012) and Sarasvathy (2001) stated that the causation approach to new opportunities revolve around anticipating the potential new benefit of the opportunity. Causation has been found to be more effective among businesses that are not in the early stage of entrepreneurs or the contemplation stage (Fisher et al., 2012; Futterer et al., 2018). However, the questionnaire deployed in the survey was designed to collect data from entrepreneurs who own a business, thus, excluding those in the contemplation stages which were regarded as the group most impacted by AL (Pati et al., 2021; Smokla et al., 2018). In addition to this, the survey questionnaire did not differentiate between the stages of entrepreneurship, thus, not allowing for the difference between entrepreneurial stages to be explored and analysed.

Previous literature on effectuation and innovation indicated that effectuation positively impacts innovation in early-stage ventures and allows for firms to be more adaptable and flexible leading to higher innovation (An et al., 2020; Bortolini et al., 2018; Reymen et al., 2017). These studies linked effectuation with innovation; however, AL was not empirically tested in isolation. Studies by Brettel et al. (2012), Futterer et al. (2018) and Szambelan and Jiang (2020) found that AL or

effectual control orientation had a direct positive relationship with the innovation in BM areas as outlined by Clauss (2017) and Osterwalder and Pigneur (2010). Brettel et al. (2012) posited that AL had a positive relationship with firms; however, their study was conducted with decision-makers in R&D projects. Brettel et al. (2012) argued that decision-makers in highly innovative firms with high levels of uncertainty replicated the condition that entrepreneurs face, indicating that the results were applicable to entrepreneurs. In addition, the argument developed by Futterer et al. (2018) posited that, in applying the AL principle, firms limit resources, and limited resources lead to increased innovation. However, although the conditions mirror that of entrepreneurs, the data was collected from management within innovation and R&D departments in Germany. The findings of Szambelan and Jiang (2020) indicated that effectual control orientation which limits risk has a positive impact on innovation within the firm. However, this study was conducted on corporate managers and the scale to measure effectual orientation did not contain elements that adequately measured AL. Based on the target population in the studies by Brettel et al. (2012), Futterer et al. (2018) and Szambelan and Jiang (2020), the inconsistent findings of this study could be attributed to the target population of entrepreneurs, which was different to previous studies. Further to this, a similar contrary finding was found by Pati et al. (2021) on a target population of owner-managers in India. Pati et al. (2021) hypothesised that AL would have a positive relationship with BMI; however, their findings contradicted the literature – AL was found to have a significant negative relationship with BMI amongst owner-managed businesses in India.

In addition to the differences in target population from various studies and the contrary literature findings, the scales used to measure AL heuristic were newly developed by Smith and Lew (2022), therefore, were not fully developed and tested in literature. The measurement scales used to collect data on BMI were developed by Clauss (2017); however, the scales used to measure BMI by Brettel et al. (2012), Futterer et al. (2018) and Szambelan and Jiang (2020) were scales adapted from various studies to capture the subconstructs of BMI. Therefore, the data collected on both BMI and AL used scales that differed from previous studies.

Furthermore, the data collected on the AL and the subconstructs of BMI were all negatively skewed with AL having the highest level of negative skewedness, the highest level of positive kurtosis and 82% of participants agreed or higher with

applying AL principle This is indicative of influence leading from the negative experiences from recent COVID-19 pandemic, the war between Russia and Ukraine, the increasing levels of inflation being experienced globally and the soaring oil prices. Furthermore, the harsh levels of lockdown implemented in SA effected the fastest growing sectors of the SA economy which were led by entrepreneurship (McKinsey & Company, 2020). This created a bias towards AL among SA entrepreneurs resulting in inaccurate hypothesis results.

6.5 CONCLUSION

There are various reasons for the hypotheses not being supported in this study: (1) different measurement scales were used when compared to previous literature; (2) the measurement scales used in the study were newly developed; (3) previous studies were conducted on corporate firms, whereas this study's target population was entrepreneurs in SA; and (4) the recent events of COVID-19 and the impact it had on entrepreneurs in SA could have influenced the results of the AL scale.

The hypotheses developed sought to answer the research question of whether AL has an impact on BMI amongst SA entrepreneurs. The results from statistical testing did not support any of the hypotheses. Therefore, the conclusion is that AL has no impact on BMI amongst SA entrepreneurs.

CHAPTER 7: CONCLUSION

7.1 RESEARCH OBJECTIVES

The interest in the study was occasioned by the importance of entrepreneurship in SA economy (National Planning Commission, 2010), coupled with the high levels of uncertainty entrepreneurs face globally given the recent events such as the COVID-19 pandemic, the war between Russia and Ukraine and the soaring oil prices experienced globally (Daniel, 2022). Over and above the difficulties that the entrepreneur in SA is facing, the global uncertainties add to the strain on entrepreneurship.

The theory of effectuation is used to describe the entrepreneurial of an entrepreneur (Sarasvathy, 2001). The theory has five principles that the entrepreneur applies, one of which is the principle of affordable loss (AL). By applying the AL principle, entrepreneurs limit their losses which allows them to take on more opportunity (Dew et al., 2009), thus leading to an increase in business model innovation (BMI) (Brettel et al., 2012; Fütterer et al., 2018; Szambelan & Jiang, 2020). BMI has proven to be of great importance to firms for creating a competitive advantage and to improving their performance (Bhatti et al., 2021; Foss & Saebi, 2017). Based on this, the study set out to answer the research question: What is the impact of AL on BMI amongst entrepreneurs in SA.

The study used the definition of BMI as outline by Clauss (2017). BMI consists of three formative subconstructs: value-creation innovation, value proposition innovation and value-capture innovation. Each subconstruct relates to a group of elements in the business model. It was therefore hypothesised that AL would impact each of the subconstructs of BMI: H1: there is a positive relationship between AL and value-creation innovation; H2: there is a positive relationship between AL and value-proposition innovation; and H3: there is a positive relationship between AL and value-capture innovation.

7.2 PRINCIPAL FINDINGS

Chapter 5 outlined the results of validity and reliability of AL, value-creation innovation, value-proposition innovation and value-capture innovation. All items measuring the AL, value-creation innovation, value-proposition innovation and value-capture innovation were found to be valid measures. Reliability was established on AL, value-creation innovation and value-proposition innovation with

the Cronbach's alpha statistics greater than 0.65. Reliability was not established on value-capture innovation: the Cronbach's alpha statistic was 0.46, therefore, below 0.65 and confirming that value-capture innovation was not a reliable construct.

Data was collected from entrepreneurs in SA. The total sample size was 141, and after data cleaning, the final sample was 127 entrepreneurs. Pearson's correlation was used to determine the relationship between the constructs as outlined in Chapters 4 and 5. The results from the hypothesis testing were as follows. H1 was not supported, H2 was not supported and H3 was not supported. This, therefore, shows that AL does not have an impact on BMI amongst SA entrepreneurs.

The inconsistent findings to literature can be attributed to four main points: (1) entrepreneurs who follow the afford loss process have a lower tolerance to risk, which leads to lower levels of experimentation (Smolka et al., 2018), therefore limiting BMI; (2) the target population of study differed from previous studies; (3) the measurement scale of AL and BMI were newly developed; and (4) the AL construct had a high level of negative skewness and kurtosis, which indicated a possible bias towards AL given the recent global events.

7.3 IMPLICATIONS FOR ENTREPRENEURS

At the early stages of entrepreneurship, AL is useful to limit the losses, therefore, allowing entrepreneurs to take the opportunity (Pati et al., 2021; Smolka et al., 2018). However, based on the findings from this study, entrepreneurs with existing businesses who apply the principle of affordable loss do not see an impact on their BMI. Therefore, entrepreneurships with existing businesses should consider other methods that will lead to improved BMI resulting in improved performance of the firm.

The recent events such as the war between Russia and Ukraine, soaring inflation and the global COVID-19 pandemic have increased instability globally (Daniel, 2022), which has had a big impact on SA entrepreneurs. This has increased the awareness of the increased risks, which resulted in an increase in entrepreneurs' proclivity to AL and, therefore, an increased focus on the possible losses and not the opportunities (Dew et al., 2009). This was evident when analysing the descriptive statistics result on AL in Chapter 6, which indicated that entrepreneurs in SA have a high level of AL heuristics. Therefore, the previously studied benefits of AL on innovation and BMI were not found in this study. In the context of the

increase in risk and uncertainty, entrepreneurs need to focus less on the possible losses and focus more on the opportunities, which will lead to an increase in BMI.

7.4 IMPLICATIONS FOR RESEACHERS

The research adds to the existing body of knowledge in three fields: entrepreneurship, AL and BMI in the SA context among entrepreneurs. The research hypotheses were not supported by the data collected. AL was not found to impact BMI in the SA context among entrepreneurs. This adds to the unexpected and inconsistent findings to literature that already exist (Pati et al., 2021; Roach et al., 2016; Smokla et al., 2018). This indicates the need for further research on this topic in the South Africa context.

The levels of AL in the data collected were much higher than expected. This is a result of the impact from recent global events. Therefore, when conducting research on AL or risk orientated behaviours, researcher should consider the influence that recent events have on the participants and how this might skew results.

7.5 LIMITATIONS

There were eight notable limitations of this study ranging from the definitions of the constructs, the methodology selected, the measurement tools and data collected.

First, the definitions and scales of BMI was not consistent with previous research. The definition of BMI has not yet been fully developed in research (Morris et al., 2005; Wirtz et al., 2016; Zott et al., 2011). Therefore, results of this study may differ on the impact to BMI.

Second, the measurement scales used in the study were only recently developed. Clauss' (2017) scale to measure BMI was developed in 2017 and the AL measurement scale was developed in 2022 (Smith & Lew, 2022). Due to the recent development of the measurement scales, there have not been many studies to demonstrate the reliability and validity of the scales.

Third, the results on the AL construct were higher than expected with 82% of participants agreeing with AL, highly negatively skewed AL and high positive kurtosis. The research did not cater for the impact of recent events on the results of both AL and BMI.

Fourth, the research design excluded entrepreneurs in the contemplation stages of the entrepreneurial journey. Furthermore, the study's target population differed from previous studies.

Fifth, the sample size of was not adequate. The sample size was 127 which just met the minimum, however, previous research on the topics indicated that the sample size should have been above 163.

Sixth, based on the snowballing data collection method, evidence from descriptive analysis and the comparison with the population of entrepreneurs by GEM (2022), it is evident that there was a sampling bias towards the characteristics of the researchers personal network. The sample closely resembled the researcher's personal networks in terms of education and age.

Seventh, in terms of the reliability of the subconstruct, value-capture innovation was found to be unreliable. The Cronbach's alpha was 0.46 and therefore below the minimum threshold to establish reliability.

Eighth, the questionnaire was conducted in English only, thus excluding majority of the population with a first language other than English.

7.6 FUTURE RESEARCH

Because of the inconsistent findings of AL on BMI, it is recommended that future research be conducted on the topic amongst SA entrepreneurs to establish whether there is a relationship between the constructs

Because of the multiple definitions and measurement scales of BMI, it is suggested that future researchers use the definition and measurement scale developed by Clauss et al. (2017).

The high levels of AL reported in the construct for the study were evidence of the recent global events. Future research is needed to develop a scale to measure AL that will remove the bias of recent events.

It is recommended that future researchers collect longitudinal data measuring AL and the impact it has on BMI. This will result in more accurate data collection and the true impact of AL on the BMI can be established.

Based on the evidence of the impact that entrepreneurial stages have on effectuation and AL, it is suggested that future research be conducted using

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entrepreneurial stages as moderating variables in the relationship between AL and BMI.

There were indications of a sampling bias created from the snowball data collection method. It is suggested that future researcher administer surveys using data based on entrepreneurial organisation.

Future studies on AL and BMI in the context of SA should cater for the language difference, thus, not excluding participants of the population.

7.8 FINAL REMARKS

Affordable loss and business model innovation are vitally import for the sustainability of firms. Hypotheses were developed, with the expectation of finding a relationship between the two fields of studies amongst SA entrepreneurs. However, the evidence from the data did not support the hypotheses. These findings add to the body of knowledge in the fields of effectuation, business model innovation and entrepreneurship.

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APPENDICES

APPENDIX A: ETHICAL CLEARANCE

Dear Branon Naidoo,

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

APPENDIX B: INFORMED CONSENT

Section: Consent							
<p>Dear Participant, I am currently a student at the University of Pretoria's Gordon Institute of Business Science and completing my research in partial fulfilment of an MBA. In an effort to study the entrepreneurial thinking process when faced with uncertainty, I am attempting to understand the relationship between the principle of affordable loss and the innovation of business models. To this end, you are asked to complete an online survey questionnaire. Your completion of this survey is voluntary, and you may withdraw from the process at any time without penalty. By completing the survey, you indicate that you voluntarily participate in this research. Your responses and participation are however valuable to us, and we would appreciate your assistance. The collated results of the study are part of ongoing research being undertaken at the University of Pretoria's Gordon Institute of Business Science. While the aggregated results of the study may be published, your individual responses will be kept anonymous and confidential at all times. The questionnaire is divided into three broad categories: section one consists of demographic questions; section two consists of questions relating to the principle of affordable loss and section three will assess the level of business model innovation. The questionnaire should take approximately 10 to 15 minutes to be completed. Thank you for your time and contribution to this research study. Please do not hesitate to address any enquiries about the questionnaire or the research study to my supervisor or me. Our details are provided below: Andre Vermaak or Branon Naidoo andre.vermaak@icloud.com 26280389@mygibs.co.za +2783 308 0235 +2779 234 7179</p>							
Agree or Do not Agree							
Section: Pre-screening							
	Are you over 18?	Yes or No					
	Is your Company registered with Companies and Intellectual Property Commission (CIPC)?	Yes or No					
Question number	Section: Demographics	Inputs					
1	How old am I?	Value to be inputted					

2	What is my gender?	Male	Female	Other	I choose not to declare my gender			
3	Am I South African?	Yes	No					
4	What is my highest qualification?	No schooling	Primary	Matric	Diploma and certificates	Degree	Post Graduate Degree	Master's degree and above
5	How many years have I been an entrepreneur?	0 - 2 years	3 to 5 years	6 to 8 years	8 to 10 year	More than 10 years		
6	Is my business primarily based in SA?	Yes	No					
Section: Affordable Loss								
	Please select how closely you agree or not to the following statements on a scale of 1 to 7 with: 1 = Strongly Disagree and 7 = Strongly Agree	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
7	If times are considerably uncertain for my business, I think about what I can afford to lose before investing money in new projects	1	2	3	4	5	6	7
8	When making business investments under conditions of uncertainty, it is important to keep the worst-case scenario in mind in order to avoid losing too much money on a project	1	2	3	4	5	6	7
9	Previous losses during times of uncertainty have made me more aware of what I can afford to lose before investing in new ventures	1	2	3	4	5	6	7
10	When things are uncertain for my business, I tend to invest small amounts of money in new ideas or projects to see how they work out	1	2	3	4	5	6	7

	11	When facing uncertainty in my business, I tend to experiment by making small investments and waiting to see what the response is from the market before spending more money	1	2	3	4	5	6	7
	12	When things are uncertain for my business, I can overcome this by spending affordably to test out new ideas	1	2	3	4	5	6	7
	Section: Business Model Innovation								
Value-creation	13	I have added new capabilities to my business in the last year	1	2	3	4	5	6	7
	14	I have added new technologies/equipment to my business in the last year	1	2	3	4	5	6	7
	15	I have created a new process or structure to my business in the last year	1	2	3	4	5	6	7
	16	I have formed new partnerships in my business in the last year	1	2	3	4	5	6	7
Value proposition	17	I have introduced new offering/s in my business in the last year	1	2	3	4	5	6	7
	18	I have targeted new segments/market in business in the last year	1	2	3	4	5	6	7
	19	I have introduced new channels to my business in the last year	1	2	3	4	5	6	7
	20	I have developed new customer relationships for my business in the last year	1	2	3	4	5	6	7
Value	21	I have created new revenue streams for my business in the last year	1	2	3	4	5	6	7
	22	I have introduced new pricing or cost structure to my business in the last year	1	2	3	4	5	6	7

APPENDIX C: CORRELATION MATRIX - AL

		AL1	AL2	AL3	AL4	AL5	AL6
Correlation	AL1	1	0.463	0.344	0.101	0.171	0.128
	AL2		1	0.305	0.187	0.215	0.243
	AL3			1	0.28	0.316	0.263
	AL4				1	0.624	0.287
	AL5					1	0.383
	AL6						1

Correlation Matrix - BMI

		CR1	CR2	CR3	CR4	PI1	PI2	PI3	
Correlation	CR1	1.000	.425	.383	.369	.388	.251	.300	
	CR2		1.000	.430	.183	.332	.287	.376	
	CR3			1.000	.294	.402	.243	.529	
	CR4				1.000	.213	.176	.212	
	PI1					1.000	.537	.570	
	PI2						1.000	.412	
	PI3							1.000	
	PI4								1.000
	CP1								1.000
CP2									1.000

Correlation Matrix

		PI4	CP1	CP2
Correlation	CR1	.107	.271	.006
	CR2	.199	.200	.134
	CR3	.409	.364	.378
	CR4	.206	.313	-.017
	PI1	.261	.299	.200
	PI2	.304	.304	.056
	PI3	.319	.437	.238
	PI4	1.000	.339	.284
	CP1	.339	1.000	.298
	CP2	.284	.298	1.000

**APPENDIX D: FREQUENCY AND COMPLETION RATE PER SCALE
ITEM**

Affordable Loss

If times are considerably uncertain for my business, I think about what I can afford to lose before	Response Count	Response Percentage
(blank)	1	0.8%
Strongly Disagree	4	3.1%
Disagree	9	7.0%
Somewhat Disagree	9	7.0%
Neither Agree nor Disagree	10	7.8%
Somewhat Agree	25	19.5%
Agree	50	39.1%
Strongly Agree	20	15.6%
Grand Total	128	100.0%
Number of Skipped Questions	1	0.8%
Completion Rate		99.2%

When making business investments under conditions of uncertainty, it is important to keep the worst-	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	2	1.6%
Somewhat Disagree	5	3.9%
Neither Agree nor Disagree	6	4.7%
Somewhat Agree	23	18.0%
Agree	45	35.2%
Strongly Agree	47	36.7%
Grand Total	128	100.0%
Number of Skipped Questions	0	0.0%
Completion Rate		100.0%

Previous losses during times of uncertainty have made me more aware of what I can afford to lose before	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	3	2.3%
Disagree	1	0.8%
Somewhat Disagree	1	0.8%
Neither Agree nor Disagree	8	6.3%
Somewhat Agree	24	18.8%
Agree	59	46.1%
Strongly Agree	32	25.0%
Grand Total	128	100.0%
Number of Skipped Questions	0	0.0%
Completion Rate		100.0%

When things are uncertain for my business, I tend to invest small amounts of money in new ideas or projects	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	5	3.9%
Disagree	15	11.7%
Somewhat Disagree	12	9.4%
Neither Agree nor Disagree	11	8.6%
Somewhat Agree	25	19.5%
Agree	44	34.4%

Strongly Agree	16	12.5%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

When facing uncertainty in my business, I tend to experiment by making small investments and waiting

	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	5	3.9%
Disagree	14	10.9%
Somewhat Disagree	6	4.7%
Neither Agree nor Disagree	10	7.8%
Somewhat Agree	23	18.0%
Agree	47	36.7%
Strongly Agree	23	18.0%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

When things are uncertain for my business, I can overcome this by spending affordably to test out ne

	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	2	1.6%
Disagree	13	10.2%
Somewhat Disagree	8	6.3%
Neither Agree nor Disagree	14	10.9%
Somewhat Agree	26	20.3%
Agree	53	41.4%
Strongly Agree	12	9.4%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

Value-Creation Innovation

I have added new capabilities to my business in the last year.

	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	1	0.8%
Somewhat Disagree	3	2.3%
Disagree	11	8.6%
Neither Agree nor Disagree	11	8.6%
Somewhat Agree	22	17.2%
Agree	54	42.2%
Strongly Agree	26	20.3%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

I have added new technologies/equipment to my business in the last year.

	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	3	2.3%
Disagree	21	16.4%
Somewhat Disagree	6	4.7%
Neither Agree nor Disagree	14	10.9%
Somewhat Agree	14	10.9%
Agree	46	35.9%

Strongly Agree	24	18.8%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

I have created a new processes or structures to my business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Agree	22	17.2%
Disagree	11	8.6%
Somewhat Disagree	4	3.1%
Neither Agree nor Disagree	13	10.2%
Somewhat Agree	26	20.3%
Agree	51	39.8%
Strongly Disagree	1	0.8%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

I have formed new partnerships in my business in the last year.	Response Count	Response Percentage
(blank)	1	0.8%
Strongly Disagree	15	11.7%
Disagree	16	12.5%
Somewhat Disagree	2	1.6%
Neither Agree nor Disagree	9	7.0%
Somewhat Agree	16	12.5%
Agree	40	31.3%
Strongly Agree	29	22.7%
Grand Total	128	100.0%
Number of Skipped Questions	1	
Completion Rate		99.2%

Value Proposition Innovation

I have introduced new offering/s in my business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	1	0.8%
Disagree	12	9.4%
Somewhat Disagree	8	6.3%
Neither Agree nor Disagree	12	9.4%
Somewhat Agree	23	18.0%
Agree	42	32.8%
Strongly Agree	30	23.4%
Grand Total	128	100.0%
Number of Skipped Questions	0	
Completion Rate		100.0%

I have targeted new segments/market in business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	3	2.3%
Disagree	14	10.9%
Somewhat Disagree	6	4.7%
Neither Agree nor Disagree	13	10.2%
Somewhat Agree	18	14.1%
Agree	51	39.8%
Strongly Agree	23	18.0%
Grand Total	128	100.0%

Number of Skipped Questions 0
Completion Rate 100.0%

I have introduced new channels to my business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	4	3.1%
Disagree	18	14.1%
Somewhat Disagree	7	5.5%
Neither Agree nor Disagree	20	15.6%
Somewhat Agree	23	18.0%
Agree	38	29.7%
Strongly Agree	18	14.1%
Grand Total	128	100.0%
Number of Skipped Questions		0
Completion Rate		100.0%

I have developed new customer relationships for my business in the last year.	Response Count	Response Percentage
(blank)	1	0.8%
Strongly Disagree	1	0.8%
Disagree	3	2.3%
Somewhat Disagree	4	3.1%
Neither Agree nor Disagree	9	7.0%
Somewhat Agree	17	13.3%
Agree	58	45.3%
Strongly Agree	35	27.3%
Grand Total	128	100.0%
Number of Skipped Questions		1
Completion Rate		99.2%

Value Capture Innovation

I have created new revenue streams for my business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Strongly Disagree	3	2.3%
Disagree	12	9.4%
Somewhat Disagree	4	3.1%
Neither Agree nor Disagree	19	14.8%
Somewhat Agree	19	14.8%
Agree	52	40.6%
Strongly Agree	19	14.8%
Grand Total	128	100.0%
Number of Skipped Questions		0
Completion Rate		100.0%

I have introduced new pricing or cost structure to my business in the last year.	Response Count	Response Percentage
(blank)	0	0.0%
Disagree	10	7.8%
Somewhat Disagree	8	6.3%
Neither Agree nor Disagree	14	10.9%
Somewhat Agree	19	14.8%
Agree	52	40.6%
Strongly Agree	25	19.5%
Grand Total	128	100.0%
Number of Skipped Questions		0
Completion Rate		100.0%

APPENDIX D: TURNITIN REPORT

The screenshot shows a web interface for a Turnitin report. At the top, there is a blue header bar with the text 'Chapters 1 to 7 - clean.docx' on the left and navigation links for 'Submission Details', 'Help', and 'turni' on the right. Below the header, a grey sidebar on the left contains a vertical scroll bar. The main content area on the right features a 'Sources Overview' dropdown menu with a gear icon, and a large '17%' similarity score with the text 'OVERALL SIMILARITY' underneath.

APPENDIX E: CONFIRMATION OF PROFESSIONAL EDITING



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28 November 2022

Declaration of professional editing

**THE IMPACT OF AFFORDABLE LOSS ON BUSINESS MODEL INNOVATION AMONGST SOUTH AFRICAN
ENTREPRENEURS**

By

Branon Naidoo

I declare that I have edited and proofread this thesis. My involvement was restricted to language usage and spelling, completeness and consistency and referencing style. I did no structural re-writing of the content.

I am qualified to have done such editing, being in possession of a Bachelor's degree with a major in English, having taught English to matriculation, and having a Certificate in Copy Editing from the University of Cape Town. I have edited more than 400 Masters and Doctoral theses, as well as articles, books and reports.

As the copy editor, I am not responsible for detecting, or removing, passages in the document that closely resemble other texts and could thus be viewed as plagiarism. I am not accountable for any changes made to this document by the author or any other party subsequent to the date of this declaration.

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