



**Business sustainability for female entrepreneurs pivoting in  
response to an entrepreneurial orientation during Covid-19 in  
South Africa**

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## **Abstract**

The research study investigated the various pivoting methods used by the female entrepreneur during the pandemic and assessed the influence of innovation driven by an entrepreneurial orientation. The purpose of the research study was to understand whether pivoting is essential for business sustainability and to investigate the innovation levels in female entrepreneurs. The impact of the pandemic caused an unstable environment in which decision-making abilities affect the survival of the business. Quantitative research was conducted via an online survey to target female entrepreneurs operating within South Africa and extended to a wide range of industries to further aid in the understanding of the effect of the pandemic. The researcher proposed the horizontal diversification and strategic change models for the investigation of pivoting whereas the vertical diversification models were linked to perseverance during the pandemic. The outcome of the research study highlighted that a combination of the pivoting models are the driver for business sustainability. Further to this, innovation influences the choice of pivoting however the short-term survival from the pandemic was established through this research study.

## **Keywords**

Entrepreneurial Pivoting, Entrepreneurial Orientation, Female Entrepreneurs, Covid-19, Strategic Entrepreneurship

## **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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## **Key Abbreviations and Meaning**

Abbreviation	Meaning
EO	Entrepreneurial Orientation Innovation
SE	Strategic Entrepreneurship
SA	South African
PH	Horizontal Pivoting
PV	Vertical Pivoting
SC	Strategic Changes Pivoting
CV	Covid Impact
P	Pivoting
TBP	Theory of Planned Behaviour
VUCA	Volatility, Uncertainty, Clarity, Ambiguity

## **Chapter 1: Introduction to the Research Problem**

### **1. Research Problem**

#### **1.1 Purpose**

This research will investigate whether entrepreneurial pivoting (dependent variable) is related to a female's entrepreneurial orientation (EO) towards innovativeness and provide an understanding of the drivers for business sustainability during the Covid-19 pandemic. The difficulties faced by businesses during the pandemic are linked to the literature supporting the positive effect female entrepreneurs' values have on their ability to make strategic decisions and achieve a positive impact on EO. The social-environmental factors faced by the female entrepreneur highlight female entrepreneurs usually underrate their abilities, skill levels and diminish their level of capability facing greater barriers in succeeding in business (Nikou, Brannback, Carsrud & Brush, 2019).

The Covid-19 pandemic shifted the global movement of international trade and created logistical transport problems in low resilience countries (Cannavale, Nadali & Espempio, 2020). The nation-wide lockdown and state implemented policies incorporated by governments forced entrepreneurs into an environment of uncertainty, business activities were disrupted and the physical business relationship was prohibited to curb the spread of the Covid-19 virus. Entrepreneurs were forced to adapt and respond rapidly to the environment for business survival (Scheidgen, Gumusay, Gunzel-Jensen, Krlev & Wolf, 2021). The concept of EO is present in organisations that demonstrate an inclination in responding to changes arising in the organisations internal and external environments.

These challenges are overcome through the activity of innovation, risk-tolerant behavior, and the inclusion of forward-looking initiatives (Covin et al., 2020). The rapid disruption from Covid-19 created a pressurized business environment in which EO is well suited for the female entrepreneur to manage in this situation. The level of flexibility and adaptability arising from EO is present in the rejuvenation of organisations processes, activities, internal capabilities, and structures (Covin et al., 2020).

## **1.2 Problem Statement**

The purpose of the research aims to determine if there is a significant relationship between the female entrepreneurs' ability to pivot during a crisis and the entrepreneurial orientation towards innovativeness. In addition, the research study aims to establish if female entrepreneurs lean towards pivoting or perseverance in business and endeavors to gain insight into how female entrepreneurs can achieve a sustainable business during a pandemic and economic crisis.

In distilling the problem statement, we will be making sense of the following research questions:

Research question 1: Aims to establish a relationship between EO (Innovativeness) in female entrepreneurs.<sup>i</sup>

Research question 2: Aims to establish a relationship between EO (Innovativeness) and a pivot model of horizontal diversifications in female entrepreneurs.<sup>ii</sup>

Research question 3: Aims to establish a relationship between EO (Innovativeness) and a perseverance model of vertical diversifications in female entrepreneurs.<sup>iii</sup>

Research question 4: Aims to establish a relationship between EO Innovativeness and strategic change decisions for pivoting.<sup>iv</sup>

Research question 5: Aims to investigate whether Covid-19 impact mediates the relationship between EO innovation and pivoting<sup>v</sup>

## **1.3 Significance of the research study**

### **1.3.1 Theoretical need for this research study**

Based on pivoting literature, the factors affecting a decision to pivot or preserve are the business timelines for undertaking an entrepreneurial action, the time taken between action and desired outcomes and finally, the commitment to pursue the action through disruption and failure to deliver according to plan (Berends, Van Berg & Garud, 2021). Prior studies into the above pivoting factors fail to highlight if any variance can be found in female entrepreneurs. The author aims to research this effect on female entrepreneurs because Covid-19 caused a disruption that required

entrepreneurial action. The dynamic environment would force the female entrepreneur to shorten the time taken between actions to have a visible desired outcome. The challenging times of Covid-19, family responsibilities for female entrepreneurs and the impact on industries that are favorable for female entrepreneurs were severely affected (Manolova, Brush, Edelman & Elam, 2020). The commitment of female entrepreneurs in SA during this crisis may be challenged and leads to investigation if female entrepreneurs accepted failure and closed the business operation or were the senses of commitment heightened to succeed through a pivoting model or perseverance model.

The concept of innovativeness is defined as “a firm’s tendency to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes” (Rank & Streng, 2018, p.489). The support from theory includes organisational structures and administrative functions as an adaption of business routines in innovativeness (Rank & Streng, 2018). Through innovation, entrepreneurs can either pivot or preserve during the decisions undertaken and these decisions may lead the business to continuation. Consequently, this research study will provide data collection results for the relationship between EO (Innovation) and pivoting during the Covid-19 pandemic.

There have been numerous literature discussions on the impact of Covid-19 on female entrepreneurs' ability to pivot, however, these commentaries have not tested the theoretical application through data collection (Morgan, Anokhin, Ofstein & Friske, 2020; Maritz, Perenyi, DeWaal & Buck, 2020; Shepherd, 2020).

Manolova (2020) highlighted the limited literature focuses on the gender differences in business models pivoting in response to economic crises or natural disasters. The finding from these investigations into the preparedness, responsiveness and business relief benefits between genders provide varied results. The literature provides evidence towards numerous female entrepreneurs seeking disaster relief loans however, are faced with reduced amounts awarded compared to male entrepreneurs (Manolova et al., 2020). The exogenous conditions of Covid-19 are unpredictable and the level of severity is difficult to forecast. The extant literature neglects the investigation into guiding small business entrepreneurs in responding to

the crisis for survival and fails to examine the resilience that small businesses undergo for survival during the crisis or analyse the recovery methods adopted (Morgan et al., 2020). Manolova (2020) contributes to how female entrepreneurs can overcome gender-based challenges through firstly, cost-cutting techniques and then pivoting in response to new opportunities that are presented during the crisis. The research aims to investigate the relationship between the cost-cutting factors in the Covid-19 impact variable and test the female entrepreneurs' pivoting ability to establish a level of resilience in female entrepreneurs. The Covid-19 impact variable further aims to establish a relationship between the female entrepreneur's orientation and provide a framework into how innovation can be a predictor of business sustainability.

Literature established around the hostile and turbulent environment of Russia has shown that individual entrepreneurs' creativity and innovativeness at a firm level has spiked due to EO behavior to engage in risk-taking and innovative activity. The relationship of risk-averse behavior of EO was analyzed against innovativeness in young and serial entrepreneurs. This suggests the greater the level of experience resulted in an ability to mitigate risk and highlighted serial entrepreneurs succeeding in new business during turbulent environments (McCarthy, Puffer & Lamin, 2018). Through this literature, a sample population of male entrepreneurs was tested. The growing body of gender entrepreneurship denotes there are differences between female and male entrepreneurs and this study hopes to gain insight, particularly into the South African (SA) female entrepreneur.

The limited research into SA and female EO may be addressed through this research and attempts to provide generalization into female entrepreneurs. The research aims to apply the learning from the turbulent environments to a pandemic and investigate the young and serial female entrepreneurs' ability to innovate. The discussion on gender difference plays a significant factor in understanding why female entrepreneurs respond defensively compared to an offensive approach adopted by male entrepreneurs during the pandemic (Morgan et al., 2020).

Based on recent literature, the effect of how knowledge and awareness influences

an entrepreneur's feelings and emotions affects the decision-making process and ultimately determines the level of entrepreneurial success. This forms part of the entrepreneurial mindset of female entrepreneurs when examining the limited level of business and educational knowledge that females are faced with (Bernoster, Mukerjee & Thurik, 2020).

The pandemic has shifted the stability and cooperative relationships amongst stakeholders and female entrepreneurs are faced with a lack of planning efficiency due to lockdowns regulations and a change in mutual trust of existing stakeholders. The disruption from the pandemic accompanies EO to create an evolving series of challenges and network relationships that must be continuously managed with an aim towards capturing value from innovation. As a result, EO in itself cannot achieve long-term organisational success whilst innovation contributes to half of the challenge. The complemented part to EO is absent from theoretical and empirical research and the author considers the pivoting capabilities to be the absent complement (Mazzei, 2018). The organisation benefits from innovation through EO and gains stability and control from pivoting (Covin & Wales, 2019).

EO is an antecedent for business success with Bernoster et al., (2020) therefore expanding on the definitions as "the strategy making processes that provide organisations with a basis for entrepreneurial decisions and action" (Bernoster et al., 2020, p.238). The successful integration of strategic management and entrepreneurship leads to the concept of strategic entrepreneurship. The female entrepreneurs' ability to think with a strategic perspective when performing business actions or the ability to take strategic action influenced by an entrepreneurial mindset forms the basis for this research (Mazzei, 2018). The EO and pivoting constructs are strategic level constructs and aim to understand the influence of innovation during the context of Covid-19.

The pivoting models proposed for testing in this research will investigate how female entrepreneurs achieve and sustain a competitive advantage thus forming part of strategic management. Through literature, the discussion on competition is considered through the lens of strategy, company and product positioning, and the

development of resources and capabilities that are imitable. Further to the discussion, innovation causes the deconstruction of the existing organisational structures process to enable the discovery of potential opportunities that allow the organisation to exploit for business success (Mazzei, 2018). Female entrepreneurs that understand the drivers of strategic decisions can use the knowledge about strategic decisions to evaluate a course of action for future business success (Bernoster et al., 2020). The theoretical need for this study will provide further discussion in the strategic entrepreneurship literature on the effect of how the context of Covid-19, the content of the entrepreneurial mindset (EO) and the process of pivoting influence the female entrepreneur's strategic ability. In addition, further providing theoretical evidence of how such strategic decisions manifest in the organisation and the discovery of internal and external environments that provide the opportune moments for strategic entrepreneurship to pervade.

The Covid-19 pandemic impacted the female entrepreneur's initial response to the pandemic to focus on the internal operational challenges facing the business to ensure business survival. The challenges start-ups faced observed the future and current innovation projects to be temporarily postponed due to financial and resource constraints. The uncertainty of business future trading prospects was hindered by the female entrepreneur's ability to access funding (Giones et al., 2020).

Female entrepreneurs were traumatized by the exogenous shock of Covid-19, however, adapted to the emergency conditions by implementing significant cost-cutting actions thus enabling the pivoting of business models to seize opportunities by vertical diversification (Manolova et al., 2020). According to Giones et al., (2020), the pandemic created a dilemma to investigate whether the disruption of Covid-19 provided substantial justification for a business strategy to be changed or whether the business survival can be achieved through the manner of how the female entrepreneur communicates and justifies the value proposition in the product or service offering. The theoretical need for this research is to determine, after the female entrepreneur's initial response to Covid-19, are the pivoting models required for long-term sustainability and deduce through the data collected if evidence can be obtained to propose a framework to be utilised during future unexpected shocks. The

Covid-19 implications on entrepreneurial actions are not yet grounded in theoretical research and the discussion of when and how a female entrepreneur should pivot is under researched.

### **1.3.2 The business need for this study**

The business rationale for this research aims to provide female entrepreneurs with tools that may be used to assist in business survival during a pandemic. The understanding of the impact on how decision-making is influenced through female EO may assist future female entrepreneurs in understanding their orientation to then commence with appropriate decision strategies.

According to the data collection from GEM (2020), SA female entrepreneurs are motivated to commence purpose-driven businesses to make a difference. The entrepreneurs are faced with high data costs which makes business operations difficult in a digital changing world. The current situation of Covid-19 forced the physical environment into either digital networks and services that created spontaneous ventures and amplified the pivoting capabilities of business (Scheidgen et al., 2021). As a further reason for the significance of this research, GEM (2020) highlighted India as a country like SA regarding the motivation to start a business as purpose-driven. The reason of importance is prior literature on technology adoption by female entrepreneurs in India had a significant impact on EO, however, this concept was not researched within a pandemic environment (Chatterjee & Gupta & Upadhyay, 2020).

In developing countries like India, technology dynamism enables female entrepreneurs to increase innovation levels and become proactive risk-takers. The adoption of information technology into business in India empowered women, provided flexibility, created information and market knowledge platforms that equipped women to seek opportunities. Digital innovation reduced female entrepreneurs' barriers to the business, gained competitive advantages by effectively redesigning and rethinking business models and opened communication channels between customers, suppliers and business partners (Chatterjee et al., 2020).

The relevance of EO innovations in female entrepreneurs in India aims to question if SA female entrepreneurs lean towards innovation during the pandemic. The Covid-19 pandemic negatively affected female entrepreneurs during the lockdown because of the young, relatively small size of the business and therefore, the industries affected by the lockdown have a high concentration of female entrepreneurs (Manolova et al., 2020). This research aims to address why some female entrepreneurs were able to survive and flourish during the pandemic, moreover, was this survival attributed to frequent pivoting or perseverance into the current course of the business (Shepherd, 2020).

According to Belitski, Guenther & Kritikos (2021), the long-term effects of the pandemic are expected to cause large reallocation within the organisation and start a cleaning process for an organisation to become more efficient. The trend amongst organisations is survival through platform ecosystems and business models which form part of creative destruction by using innovation whilst aiding the female entrepreneur to achieve value creation (Belitski et al., 2021).

The long-term nature of affect as part of a female entrepreneur's characteristics is more likely to drive the influence over EO. The strategic posture of EO is subjective to changes in the market, products, competitors and business core competencies thus changing the strategic posture of an organisation is influenced by the female entrepreneur's affect traits. The inverse direction of this relationship is considered less conceivable according to Bernoster et al., (2020).

The aspect of the literature not tested is the relationship between innovative entrepreneurial orientation and entrepreneurs pivoting ability in female entrepreneurs and should pivoting be a driver for business sustainability during a crisis.

#### **1.4 Delimitations**

The researcher will not investigate the multi-dimensional properties of EO for risk-taking, proactiveness, competition and the effect of these dimensions on the female entrepreneur's ability to pivot. The numerous conceptualisations of a pivot as a change, as a process or event and as a state will not be tested during this research.

The pivot as a change relates to not accepting an idea with the least potential hence deriving a business model that is scalable and repeatable. The process or event of a pivot investigates the sequence of actions occurring over time that give rise to a structured approach of pivoting. Lastly, the pivot as a state occurs frequently and is indistinguishable from normal business decisions (Alejandra, Chaparro, Augusto de Vasconcelos Gomes, 2021).

### **1.5 Assumptions**

The research study depends on the assumption that opportunity recognition is a driver for entrepreneurial orientation. The further assumption to the relationship of opportunity recognition is to prompt the female entrepreneur to pivot. The assumption is extended to the significant influence on entrepreneurial orientation on a female entrepreneur in South Africa. This relationship has been supported through literature studies in India and this assumption will be tested for validity in a South African context.

## Chapter 2: Literature Review

### 2.1 Introduction

Entrepreneurial orientation can be referred to as a cultural construct at a firm level involving innovation, proactiveness and risk-taking strategic decisions. The strategic entrepreneurial process at a firm-level includes the methods, practices and styles that managers adopt to act entrepreneurially (Cannavale et al., 2020). The EO has been elaborated in literature as a group of constructs that are concerned with the entrepreneurial behaviour, the decision-making aspect and the process in the organisation (Wales, Covin & Monsen, 2020). The influence of an environment considering the availability of resources and the uncertainty in technology, supply chain shifts and the change in customer preferences affects the level of EO (Mckenny, Payne, Short, Ketchen & Moss, 2018).

The literature review demonstrated a positive association between effect and EO. The positive feelings and emotions are linked to innovativeness, proactiveness and risk-taking for a sole proprietor whilst small business owners are positively linked to innovativeness (Bernoster et al., 2020). Prior literature stated entrepreneurial decision-making is influenced by the difference in gender, cultural difference, risk-taking ability and problem-solving by experienced entrepreneurs (Bernoster et al., 2020). The impact of EO on young firms highlights innovativeness as an important dimension for growth. The theory suggested that innovativeness and risk-taking contribute to firm success irrelevant to self-efficacy and in the absence of a dominant trait (Palmer, Niemand, Stockmann, Kraus & Kailer., 2019).

Throughout literature, pivots are described to resemble various forms representing either as a change, a strategic decision, as a correction or replacement in case of a failure, as a state and as a result of a process to explain the changes within an organisation (Alejandra et al., 2021). Entrepreneurs embrace the concept of pivoting as a strategic tool to accomplish the survival of the business during a changing environment. The process of pivoting entails a change in the strategic direction of the business by employing a restructure of the business resources, processes and business models by undertaking numerous strategic decisions that deal with the

various opportunities and problems faced by an entrepreneur (Kirtley, 2020). The significance of this study is aligned to the pivoting mechanism described as a change to a strategic decision or as a correction or replacement in case of business failure will be assessed to determine the impact Covid-19 had on the female entrepreneur's decisions. The consequence of both mechanisms relates to a change in the original business model which no longer yields the expected results thus are either replaced, changed or transformed to ensure survival when resources are considered limited (Alejandra et al., 2021).

The exogenous shock of Covid-19 demonstrates the female entrepreneur is required to build resilience and be prepared to seek opportunities to survive the post-crisis phase. The female entrepreneur's intention to wait for business to stabilize back to normal will not result in the organisation moving forward (Giones et al., 2020).

## **2.2 Entrepreneurial Orientation and Female Entrepreneurs during Covid-19**

Female entrepreneurs participate in the growth of the economy through extensive employment and the adoption of innovation (Santos, Marques & Ferreira, 2018). The Global Entrepreneurship Monitor (GEM) Women's Entrepreneurship 2019/2020 report indicates the early-stage entrepreneurs of female activity are closely proportionate to male activity. In South Africa, data from GEM (2020) highlights female entrepreneurs' activity rate is 10.2% of the total adult population whilst male entrepreneurs' activity rate is 11.4% of the total adult population.

Following from literature, females are entrepreneurially orientated to low innovation levels and low risk-taking ability. This conversely impacts a female entrepreneur's propensity to start a venture due to being incapable to recognise opportunities and overcoming the fear of failure (Santos et al., 2018). It is apparent from previous literature where young firms not older than 12 years, innovativeness is essential for SMEs' success and establishes an agreement to the assumption that individual entrepreneurial traits affect the success of an SME. The study confirms that EO can be achieved successfully through the presence of a single dimension of innovation, whilst proactiveness and risk-taking are absent (Palmer et al., 2019). This recent study contradicts prior research that suggested negative implications for young firms

utilising a single EO dimension and showed a non-significant effect of EO in young firms. Further insight confirmed risk-taking in young firms have positive effects on performance whilst firms older than twelve years should avoid risk for EO (Palmer et al., 2019). The factors of influence for female entrepreneurs to start a venture related to the smaller size of the operation, reduced access to resources and an absence of human capital (Santos et al., 2018).

The findings of prior literature emphasized female entrepreneurs have a lower level of positive attitude towards the intention to start a business thus the effect of attitude affects the success of the business (Nikou et al., 2019). The extension of the Theory of Planned Behavior (TPB) makes observations towards female entrepreneurs having lower self-efficacy that affects the intention to start or continue in a business, however, there is an increase in the rates of female entrepreneurs starting a new business irrespective of low self-efficacy which no longer can be seen as a deterrent for females to create a business (Nikou et al., 2019). Consequently, these findings support the female entrepreneur operating less than 5 years can significantly impact EO through innovativeness and formed the basis for this research study.

The Covid-19 pandemic negatively impacted Small and Medium Enterprises (SMEs) and affected the SMEs' sustainability. Due to the unpredictable nature of the pandemic, entrepreneurs were unable to develop strategies to ensure business sustainability. Recent research studies support EO as an instrument to solve SME's sustainability in emerging countries amidst and post the pandemic. The linkage of EO and enterprise performance yields significantly positive results towards the type of innovation adopted by the SME whilst providing a competitive advantage to the business (Li, Anaba, Ma & Li, 2021).

Young entrepreneurs are cognitively flexible with their management activities, structure and routines due to limited business operating expertise thus leading to an iterative innovation process developed through experimentation (Kirtley, 2020). SME's experience resource constraints during an economic crisis and benefit from an EO and an effectual decision-making logic relationship that allows SMEs to utilise the creative resources within the business to take advantage of unpredictable and

emerging opportunities (Laskovaia, Marino, Shirokova & Wales, 2019). In resource-rich environments, numerous innovation projects are undertaken to gain a competitive advantage however in contrast to resource-constrained environments, the female entrepreneur considers a decreased urgency for innovation and focus on competitiveness (Mckenny et al., 2018).

Strategy development towards reinforcing the positive relationship between EO and entrepreneurial performance through innovation is key for continual survival from the pandemic (Li et al., 2021). In the case of EO, effectual logic positively enhances the performance of a business during periods of uncertainty using a non-predictive strategy (Laskovaia et al., 2019). The focus of new innovation creation needs to become the central focus of a female entrepreneur and be internalized as an organisational priority goal (Wales et al., 2020). The use of networks enables the female entrepreneur to valuable resources, relevant information, advice and solutions to potential problems.

The level of entrepreneurial skill displayed by the female entrepreneur is shown through literature to strengthen EO in female entrepreneurs (Santos et al., 2018). The Covin and Slevin (1989) scale for EO favors product innovativeness over process innovativeness to offer customers value-added benefits in which a premium price can be achieved. The difficulty with product innovation arises when the development of unique products has a level of risk associated due to the customer demand being unknown. The amount of innovation investment required to expand into new markets is risky especially if the return is unknown (Linton & Kask, 2017).

The literature describes EO in terms of what it means for an organisation to be entrepreneurial and behaving entrepreneurial which positions the organisation in new domains for growth. Through this act of entrepreneurial behavior, the female entrepreneur acquires knowledge, strategic learning occurs and improvement in competitive positioning. The assessment of EO based on the sub-dimensions of innovation, proactive and risk-taking have been argued to be reconceptualized into the dimension of entrepreneurial behaviour integrating innovativeness and proactiveness to resemble the commercialisation of innovative products. (Eshima &

Anderson, 2017).

In particular, the study conducted by Wales, Covin and Monsen in 2020 demonstrated the female entrepreneur experiences the strongest EO after achieving synergies between the management level, organisational process and the creation of new products or services. The applicability of this concept to this research study explains the effect of a female entrepreneur failing to embrace the sense of strategy will fail to achieve a higher EO thus noticing a disconnect between organizational process and innovation creation.

The entrepreneurial ecosystem during the pandemic is unpredictable and changes rapidly thereby supporting prior literature for the powerful influence that affect has on female entrepreneurs' cognition and behaviour in the action taken during the Covid-19 pandemic. The concept of affect is an expression of positive or negative emotions or feelings and is described as a positive or negative affect. The role of affect has been established in the Bernoster et al.,(2020) study demonstrating the applicability of affect through innovation and the capacity to respond effectively to changes in dynamic environments. The extant literature argued female entrepreneurs are deprived of resources, education and network capabilities that affect their business success. The importance of female entrepreneurs gravitating towards a positive affect of their capabilities enables the female entrepreneur to control the level of skills and abilities they pose to take actions towards survival (Nikou et al., 2019).

The association of affect has been extended to a level of effort exerted, personal persistence, the commitment to underperforming projects, creativity and attitudes experienced by the female entrepreneurs. The relevance for this research study indicates the positive affect is positively associated with the performance of an organisation and the attitude and innovativeness in SME companies. Further to this, the positive affect is positively associated with EO and the inverse applies to negative affects (Bernoster et al., 2020). In addition to this, the EO influenced by affects plays a role in the success of a business.

The concern explained in prior studies demonstrates female entrepreneurs decide to

enter an industry based on personal characteristics which fit the potential industry hence experience barriers of difficulty in venturing into new industries. The relevance of this research illustrates through a perceived enhanced level of failure experienced by female entrepreneurs, the transition into innovation industries is greatly affected. The influence of social factors and cultural values argues the tendency of female entrepreneurs to elect to operate in stereotypical industries due to the level of perceived skill (Nikou et al., 2019). An environmentally induced positive affect leads to the organisation performance heightening however, an equilibrium is reached thereby resulting in a decline in the organisation performance. The positive affect is further linked to openness to experience, agreeability and conscientiousness which are applicable for EO.

The EO imposed by a female entrepreneur leads to a deliberate action to start a business and is instrumental in reducing the rate of business failure. On top of this, the EO dimension of innovation is a significant contributor to the relationship of a positive affect generates a positive EO. The EO relationship between affects is not influenced by the female entrepreneurs that operate in a capacity of a sole proprietor or business owner (Bernoster et al., 2020).

The importance of entrepreneurial education allows the female entrepreneur to develop the attitude needed for business and develop entrepreneurial skills. The studies on gender entrepreneurship highlighted that female entrepreneurs have less experience and training although the importance of the female entrepreneurs' family plays a role in providing the gap. The role of the family serves as a training ground that allows the female entrepreneur to prepare for interaction between employees and clients, utilise planning skills and develop motivational techniques thereby emphasizing the level of education that enhances the EO effect and innovation thus predicts the level of training in female entrepreneurs (Santos et al., 2018). The level of entrepreneurial education, business experience and risk propensity contribute to playing a role in the female entrepreneurs' intention to start a business as a result favoring a formal entrepreneurial education. Prior exposure to an entrepreneurial education had a positive effect on the level of perceived behavioral control (Nikou et al., 2019).

The female entrepreneurs' level of entrepreneurial skills is reliant on personal capacity however, the skills required for a successful business can be developed through training, practice and business experience. The important skills and abilities include leadership, communication, innovation, creativity, problem-solving and networking (Santos et al., 2018). The importance of perceived behavioral control associates the individuals' perception of performing a behaviour as easy or difficult thereby, the level of perceived behaviour predicts the female entrepreneurs' behaviour directly whilst the intention is predicted by a level of self-efficacy (Nikou et al., 2019).

### **2.3 Entrepreneurial Pivoting in Early-Stage Entrepreneur**

The strategy developed at the onset of a business can be changed by the entrepreneur following the new information for the change in strategy conflicts or elaborates the entrepreneur's belief around the business and uncertainties faced (Kirtley, 2020). The difficulty faced by young entrepreneurs is assessing which strategy is viable to act upon due to the limited business knowledge and history of performance of the young firm or new venture proposed (Wood, Palich & Browder, 2019). In a particular, recent study conducted by Alejandra (2021), the development of a pivoting framework outlines the actions required and the direction of decision-making start-up organisation can follow when considering to pivot. The first step which is the recognition stage is driven by a situation faced with failure and requires the female entrepreneur to acknowledge a substantial change is needed and greatly influenced by the cognition of the female entrepreneur. According to Kirtley (2020), entrepreneurs orientated towards innovation may affect the inclination for a business model based on business expertise.

Following from prior research, two types of pivots are possible and are explained in terms of an iterative pivot and a complete pivot. An iterative pivot is an alteration to the existing product or service offering in attempting to maintain market positioning and it focuses on responding to competitors' movements. The complete pivot is based on negative feedback received from a customer about an existing product or service offering which results in a new product or service offered in replacement. A

fundamental contribution to a complete pivot (the ability to replace and terminate a product or service offering) is viewed in prior literature as a differentiator principle (Wood et al., 2019). The author draws from the differentiator aspect of a pivot and for this research study, linked an iterative pivot to a vertical diversification strategy and a complete pivot thus linked to a horizontal diversification strategy. Therefore, these proposed linkages served as a basis for this research study and aimed to demonstrate through horizontal diversification, the female entrepreneur will pivot and through vertical diversification, perseverance will occur.

The pandemic caused the female entrepreneur to pivot as a strategic decision from the potential threat of business failure in which case the appropriate pivot models will be implemented. The pivot was driven by a change in information, environmental changes, industry shifts, changes to market conditions and changes in technology—thus all indicative of the effects the pandemic had on the business world (Alejandra et al., 2021). Further to this, the research study was aimed at female entrepreneurs operating within 5 years and learning from doing strategy is suitable compared to established businesses adopting a performance gap strategy that varies between target and actual performance (Kirtley, 2020).

#### **2.4 Pivoting through Business Models**

Business model innovations are described in the literature to generate greater returns than product or process innovation. The rewards from implementing a frequent business model innovation are that it brings about an improvement to the resilience of the organisation to the changes in the environment and provides a sustainable competitive advantage (Geissdoerfer, Vladimirova & Evans, 2018).

The pandemic had created the shift from physical store operation to online operation and extant literature highlighted that pre-ovid, the store retailer would consider online retailing as a creation of a new business model. The online business model in this context would complement the current business model and yield greater effects if the new business model was adopted earlier in business whilst in the face of conflict, incumbents would have the new business model included as a separate autonomous business (Rask & Günzel-jensen, 2020). The multifaceted roles to business model

innovation guides the organisation to change the entire business or specific individual aspects and permits the response to either opportunity presented or resolve challenges faced by the organisation and has the mechanism to facilitate diversification and innovation (Geissdoerfer et al., 2018).

The nuance established through literature highlighted female entrepreneurs are prompted to adopt sustainable strategies as part of social responsibility (Neumeyer & Santos, 2018). The current generation of millennials is seen to be environmentally conscious and socially aware. The female entrepreneur included in this generation is considered to be sustainability-oriented in the entrepreneurial business ideas that form the foundation of the business venture. The salient difference from commercial entrepreneurship is driven towards a focus on the creation of value and a great impact on the perceived business and social support that arises from a sustainable business venture (Vuorio, Puumalainen & Fellnhofer, 2018).

The proficiency of female entrepreneurs with problem-solving, addressing issues of conflict and uncertainty and being orientated towards relationship maintenance is seen to be more equipped to represent the needs of others during the business thereby, the integration of sustainable values and procedures is noticed in the strategy postures of female entrepreneurs (Neumeyer et al., 2018).

Following from the broad definition of EO involving a sense of acting entrepreneurially through the behaviour exhibited, the female entrepreneur is pulled into a sustainable business route by possessing the attitude that shapes the values and priorities essential for the enjoyment and fulfillment needed. The discovery and exploitation of the vast opportunities associated with the sustainable business industry and driven by a sense of innovation and risk-taking, the female entrepreneur disrupts the market equilibrium and thus transforms a business sector towards a greater good of environmental and social sustainability (Vuorio et al., 2018).

The technology-orientated sustainable business models are noticed in technology-based business ventures, incubators, higher education institutions and financial services. The consensus in the literature highlighted those female entrepreneurs

faced a level of difficulty to access technology-orientated sustainable business whereas the access to societal and environmentally sustainable business models presents no difficulty to access thus emphasizing the underrepresented female population (Neumeyer et al., 2018). The significance of an innovative, sustainable business model affects the value proposition of the products or services to represent economic, social and ecological value. The business infrastructure and logistics are adjusted to reflect a supply chain coherent with sustainability, hence the organizational transformation occurs for the business to operate in achieving social and environmental goals through the development of upscaling solutions (Neumeyer et al., 2018). The reason for the attractiveness of a sustainable business resonates with females having stronger desirability of social and environmental business goals compared to the economic goals of male entrepreneurs (Vuorio et al., 2018).

The controversy arises in the distinction between the changes in an organizations' activities is conducted in a manner where the product innovation yields a new value proposition or if this qualifies as a business model change. The path of business model innovation is dependent on the female entrepreneur's position in the business (Geissdoerfer et al., 2018)

The horizontal diversification model for pivoting is associated with a deliberately planned business model innovation where the potential innovation projects are complex thus noticed in the development of new products or services. The challenge in adopting a horizontal diversification business model relates to the alignment of all business model elements to achieve an optimal situation for the exploitation of opportunities to gain a competitive advantage (Geissdoerfer et al., 2018).

The imitation business model innovation comprises where the female entrepreneur utilizes existing innovation created by incumbents in the industry, therefore, imitating the value proposition offered to customers. The innovation business model comprises the development of the technology and the creation of the value proposition. (Rask et al., 2020).

The consequence of female entrepreneurs adopting a business model innovation

during the pandemic prevents the strategic merger or acquisition to take place to ensure the business' survival. Business model innovation has a high level of failure because the initial investment in transaction cost is high and the organisation undergoes disruptive and incremental innovation. The start-up organisation benefits from incremental innovation and is frequently performed compared to incumbents (Geissdoerfer et al., 2018). The start-up female entrepreneur proceeds to develop business model innovations associated with a demand-pull innovation approach causing the value proposition to be intertwined with the customer needs for market expansion and to gain customer loyalty. This approach is different in the incumbent where the trajectory is towards an innovation pull approach focused on internal cost-cutting, productivity levels, and achieving flexibility within the organisation (Rask et al., 2020).

## **2.5 Strategy Development**

The Covid-19 pandemic forced female entrepreneurs into an uncertain environment making the choice and selection of alternative strategies salient. The start-up entrepreneur, before implementing a course of action for the innovative idea, is required to first analyse which alternatives the organisation will not proceed with instead of assessing the potential alternatives. The process of iterative experimentation within an environment permits the course of action yielding learning in addition to gleaning sufficient information about each alternative (Gans, Stern & Wu, 2019).

The early-stage female entrepreneur during the extremely uncertain conditions imposed by the pandemic is unlikely to decide on an optimal business idea to take due to the vast amount of relevant information required that is missing and the exhaustive amount of time and effort involved in obtaining this information. The severe impact of failing to get the idea right can have drastic consequences for the long-run survival of the organisation. The research demonstrates the lean-start-up method as an essential probing method to assist the female entrepreneur to discover, probing and practicing the concepts of each business idea until a viable idea is postulated in an uncertain environment through learning by doing which impacts innovation through the process of experimentation (Leatherbee, 2020).

The uncertainty of the pandemic caused the business situations to continuously change hence business planning helps the female entrepreneur to monitor the changes continuously and reassess the viability of the option given the change in the current situation. The downside to business planning is the amount of time and resources required by the female entrepreneur. The context of the pandemic is fast-acting and requires the female entrepreneurs to invest time and resources into activities that generate the rapid product development for new products, finalizing and concluding customer contracts for future and current sales (Giones et al., 2020).

The importance is to evaluate the transformation of the female entrepreneur from a pre-Covid situation to a Covid situation. Innovation results in the commercialization of an invention thus relating to SE through the Strategic Renewal (adoption of new strategy), Regeneration (new product or service), Reconfiguration (existing product, service, or markets), Organisational Transformation (internally driven innovation for strategic improvement), Business Model Reconstruction (change to existing business models), Diversification (horizontal or vertical) and Strategic Networks (creation of alliances) (Mazzei, 2018).

Based on the findings by Eshima & Anderson (2017), there is evidence to support the role of EO as a multidirectional construct that drives opportunity discovery but at the same time, can appear to be the strategic mechanism that allows an organisation to capture value from emerging opportunities. The influence of female entrepreneurs recognising resources that generate opportunities even in uncertain times thus will occur before the EO domain is present and emphasizes that opportunity recognition is a necessary condition for the emergence of EO.

The revolution of the multidirectional direction of EO challenges the extant literature assumption that EO is used to explore new opportunities (Eshima & Anderson, 2017). The nuance work on resilience is represented through the lens of an adaptive capacity and process in which strategic challenges are addressed by the responsiveness and reinvention to achieve strategic renewal by innovativeness (Herbane, 2019). The adoption of frugality presents a level of resilience to the female

entrepreneur by reassessing the achievable goals of the organisation. A female entrepreneur that behaves frugally has a long-term approach to achieving the business goals and is essential for business survival beyond the next two years. This is conducted by considering all resources available that can be utilised to obtain the best option for the acquiring of new goods or services (Giones et al., 2020).

The lockdown measures imposed by the government shifted the value-chain for organisations, especially the female entrepreneur operating in the international business space. The strategic orientations required for survival during the pandemic involved entering and access into a domestic market that is unfamiliar to the female entrepreneur thus viewed as a foreign market. EO is viewed to be the strategic posture that is crucial to survive and enable the female entrepreneur to prosper in a domestic competitive environment and affects the expansion into an international market in a similar manner (Solano, Herreo & Collado, 2018).

The salient effect of the pandemic brought changes to the organisations' resources whereby new resource combinations were available for the female entrepreneur to proceed with a course of pivoting, hence improving the adaptability of female entrepreneurs to respond in a crisis (Eshima & Anderson, 2017). The emergency response denotes the female entrepreneurs' immediate response to dispose of assets to obtain cash flow and divest organizational resources that no longer contribute to the long-term vision of the business. The In Crisis phase of the disaster management framework created by Giones et al., (2020) highlighted the female entrepreneurs' adjustment of the business planning activities to diminish the level of formality associated with business plans due to the response time for action being reduced.

Mazzei (2018) suggested the process stage of SE is a linear phase where competitive advantage is developed through the action of identifying opportunities that enable the female entrepreneur to behave strategically and manage resources of the organisation and ultimately result in the female entrepreneur considering and applying innovation and creativity. The alternatives are evaluated based on the cost-benefits from the information gathered about the industry and the attractiveness of

different markets segment to enter. The significance of experimentation in EO paves the road for the discovery of alternative strategies however the paradox of entrepreneurship is experienced. For this reason, Gans, Stern & Wu (2019), describes the paradox of entrepreneurship entailing the knowledge gained from experimentations allows the ranking of alternative viable strategies however, the partial level of commitment excludes the alternative strategic choices when attempting to use experimentation to resolve the uncertainty. Further to this, Gan et al.,(2019) postulated the investigation of alternative strategies to be conducted through the rule of “Test Two, Choose One” (p.745) where the female entrepreneur makes use of learning about the alternatives to inform the direction of the search process, then promoted by a positive feedback response the search is continual until the limitation of learning is achieved (Gans et al., 2019).

The female entrepreneur undergoes the process of strategic thinking, acting and learning when preparing to enter a new foreign market that incorporates the continuously changing internal and external factors. The Covid-19 pandemic deviates from the resource accumulation principle into a dynamic capability mode where the female entrepreneur discovers the importance of innovation, learning and a good strategy (Solano et al., 2018). The applicability of operating in an international market is similar to the operation in a domestic market whereby the company has less information about the needs and demands from customers, the organisation faces the challenge of dealing with competitors that are absent in other markets or employ different strategies and positioning in these foreign markets (Solano et al., 2018).

## **2.6 Impact of Innovation influenced by EO and Pivoting**

### **2.6.1 Innovation enhancing Pivoting**

A dynamic environment creates opportunities for the entrepreneur to exploit resulting in favorable entrepreneurial actions (Santos et al., 2018). While EO provides the strategic posture of the organisation when dealing with changing markets and competition, the female entrepreneur benefits from the investment in innovation to overcome these factors. The adoption of a vertical or horizontal diversification

strategy is essentially the growth strategy that will assist the female entrepreneur to adjust to market changes and maintain a competitive advantage. These growth strategies can meet the demands of the customer through the design of the product, the level of quality and offer the customer the benefits of speed and flexibility (Linton & Kask, 2017).

The risk aversion nature of female entrepreneurs is favorable for horizontal diversification through market development, product development, market penetration and unrelated diversification into new products or services into new markets because of the positive affect relationship of creativity leading to innovation. The danger of a complete pivot hinge on the accuracy of the new product or service offering to fulfill the unknown customer desires and an entrepreneur is less acceptable of risk and performance loss below the desired level of performance thus effecting actions to mitigate (Wood et al., 2019). This concept is formed through the literature review, supporting a reduced EO of risk propensity is a requisite for the adoption of full diversification during turbulent environments (McCarthy et al., 2018). The horizontal diversification strategy is linked closely to product innovation thereby providing a competitive advantage.

According to the work of Linton & Kask (2017), the incorporation of horizontal diversification into a business will result in a positive association of innovation in EO. The necessity of this finding for the current research encourages the risk-averse female entrepreneur to consider pivoting during a crisis by considering the current position and focus of the business as extremely risky, thus implementing a horizontal diversification strategy to reduce risk as a mechanism to account for uncertainty in the turbulent environments. The controversy is how far from the original product has the female entrepreneur expanded to consider such action a pivot. The findings from literature highlighted the usual action incorporating the combination of a new resource is an extension of the original product and seldom a complete departure from the organisation's offerings (Eshima & Anderson., 2017).

The shift in declining risky options during stable conditions forces a mindset change to consider previous risky options as viable in dynamic environments (McCarthy et

al., 2018). Based on the literature of Manolova, Brush and Edelman (2020), a successful business pivot model particularly to deal with Covid-19 requires concurrently, the female entrepreneur to take advantage of opportunities and moderate the level of risk contained. This finding challenges the stereotypical entrepreneurship gender research that denotes female entrepreneurs in response to a crisis, pursue reduced risk options whilst male entrepreneurs seize opportunity options (Manolova et al., 2020).

According to Santos, Marques and Ferreira (2018), opportunity recognition positively proliferates EO in female entrepreneurs due to psychological characteristics of being accomplishment-focused, the position of control, tolerant level of uncertainty and risk propensity. The revolution of advancing technology and the importance of information has shifted the perspective of innovation from a business strategy to an inescapable survival activity (Li et al., 2021).

On the contrary, the prior theory argued business strategically develops the ability to pursue both opportunities and advantages by the acquisition, development and leveraging of resources that will yield results of performances contributed by EO (Rank et al., 2018). A study by Li et al.,(2021) highlighted the relevance for this research study in supporting the type of innovation adopted by an entrepreneur is predictable due to the significant influence of EO during the pandemic. Long-term sustainability is achieved through the continuous innovation of new ideas and product development, displayed by EO characteristics of inimitability, an intense level of innovation and an inclination towards risk acceptance (Li et al., 2021). The applicability of this concept aims to research the method of pivoting adopted by female entrepreneurs for continuous innovation and investigate the relationship between female EO and female entrepreneurs pivoting capabilities influenced by the pandemic.

The formation of a collaboration network provides a unique competitive advantage to the entrepreneur as a significant strategic resource. The information-sharing facilitates the knowledge of the process, technology advancements and opportunities in markets whilst promoting the success of EO activities of innovation (Rank et al.,

2018). Recent literature demonstrated superior adoption of incremental innovation to continuously change products, services and processes required to address the changing needs and wants of customers due to Covid-19 as a driver for EO. Disruptive innovation enabled entrepreneurs to venture into new markets through opportune methods of providing customer satisfaction and influencing the mindset of the consumers and was the driver in the manufacturing business (Li et al., 2021).

The research question aimed to investigate if female entrepreneurs pivoted in South Africa during Covid-19 is affected by their entrepreneurial orientation. Through academic literature, the narrative of female entrepreneurs tending towards the diminished adoption of information technology has been challenged during the pandemic with female entrepreneurs utilising to engage with customers online through vertical integration, adapting their products, amending a pricing model from a subscription model to a la carte model and optimizing a website design for customer satisfaction. The pandemic has demonstrated the resourcefulness of female entrepreneurs in amending products offering to address the social needs created by the pandemic (Manolova et al., 2020).

*H1: EO Innovation is a positively significant relationship for female entrepreneurs during Covid-19.*

*H2: EO Innovation is positively significant when adopting horizontal diversification for pivoting.*

## **2.6.2 Innovation and Strategic Changes**

The crucial element for female entrepreneurs to survive the pandemic requires a strategic change that allows the organisation to adapt to environmental changes and through the redefinition of the organisation's mission, the priorities are altered and new goals are envisioned to achieve the change in direction of the organisation (Cholula, 2021). The goal of a successful business is to create, capture and deliver value to stakeholders. The pursuance of adjusting products for the satisfaction of customers may improve the revenue by the volumes sold but the reduction of the product price drastically affects the poor profitability (McMullen, 2017). The additional

benefit of strategic changes is the ability to provide the female entrepreneur with the foresight to anticipate and induce changes essential for survival (Cholula, 2021). Therefore, the goal of business is to generate long-term success and thus, the importance of profitability is relevant when the female entrepreneur is considering to pivot or preserve during the pandemic (McMullen, 2017).

The effect of opportunity recognition allows the individual role of the female entrepreneur to be distinct while undergoing the decision to exploit an opportunity recognised (Santos et al., 2018). The literature review on vertical diversification yielded a weak significant difference between female entrepreneurs selecting forward and backward diversification compared to male entrepreneurs however neither leveraged towards full integration.

Vertical integration provides a competitive advantage by the adjustment of the value chain and shows no significant relationship of EO towards risk propensity (McCarthy et al., 2018). During Covid-19, the causal logic approach to EO may reduce the entrepreneur's flexibility and adaptation to a changing environment because of the formal planning process (Laskovaia et al., 2019).

Conversely, in hostile environments, opportunities are utilised to distribute risk and improve the control of changing environments by maintaining value chain control by controlling supplier and customers resources (McCarthy et al., 2018). The risk aversion nature of the female entrepreneur displays avoidance towards risk-taking thus opting for a reliable traditional approach of vertical integration. The factors appealing to female entrepreneurs to apply vertical integration are not influenced by the size and age of the firm or the level of experience of the entrepreneur, however, is positively significant depending on the number of start-ups (McCarthy et al., 2018). The further argument for vertical diversification strategy which aligns to a process innovation that will notice the reduction in R&D cost because customers are price-sensitive and demand less novelty and product design. Through the Linton and Kask (2017) study, the vertical diversification strategy was proven to not include innovativeness because this growth strategy is concerned with cost efficiencies and standardisation of process thereby reducing the organisation's flexibility. The benefit

for this notion for small retailing firms tends to consider horizontal diversification as the necessary strategy for business survival however, based on their entrepreneurial environments, the growth strategy could favor vertical diversification (Linton & Kask, 2017).

The applicability of female entrepreneurs adopting effectual logic decision-making during Covid-19 enables the experimentation of new products or services and business models and the avoidance of financial loss through the controlled commitment of resources provides the female entrepreneur flexibility to exploit opportunities and the creation of a network structure of business partners and alliances (Laskovaia et al., 2019). The current business model based on research confirms that female entrepreneurs choose to adopt during Covid-19 by reducing operational costs and pivoting the business models to enable seizing opportunities (Manolova et al., 2020). EO and effectuation enable the entrepreneur to undertake new product development when resources are limited by capitalizing on markets or through new market creations based on the innovative entrepreneurial orientation (Laskovaia et al., 2019). Following from literature, the young entrepreneurial business displays a strategic change in response to a reactive manner thus aiding why a business may or may not change in response to innovation undertaken by other businesses since information regarding its innovation process is limited (Kirtley, 2020).

The fundamental insight through prior studies demonstrated that female entrepreneurs lean towards new product and service offerings and a change in the marketing avenues as permanent implementable strategies to address concerns after the pandemic. The temporary business models involved a virtual office and streaming activities that will be revised after the pandemic (Manolova et al., 2020).

An iterative pivot is inclusive of online platforms as a pivot tool to shift the business operations to become more efficient in distribution and customer sales (Wood et al., 2019). Female entrepreneurs exhibiting effectuation may be susceptible to continuous pivoting in attempting to continually adapt to a dynamic environment since the benefit on performance decreases over time (Laskovaia et al., 2019). The

importance of the Covin and Selvin (1989) scale attests to process innovation not being part of the main innovative feature of EO and as result, the expected outcome is a negative association of EO with a vertical diversification strategy. The practical application of this theory encourages female entrepreneurs to match the growth strategies needed to gain a competitive advantage with their EO alignment (Linton & Kask, 2017). The research study therefore investigated if continuous pivoting is a driver for the sustainability of female entrepreneurs.

Founding ideas why young entrepreneurs do not pivot after considering to make a strategic change is aligned to the entrepreneurs' passion regarding its product or a resistance to change is established from founding beliefs (Kirtley, 2020). According to McMullen (2017), pivoting is a tool that can be used to facilitate the pursuit of a female entrepreneur fulfillment of passion provided the passion to start a business is not easily discarded. The exogenous shocks of Covid-19 affected the behavioural patterns of a female entrepreneur to consider new products or services induced by rapid innovation to evolve from the original inspiration that encouraged entrepreneurial activity and thus pivot. The argument for preserving during the pandemic is possible when the female entrepreneur chooses to not compromise the original idea and product of the business through the strong passion and motivation assigned as fundamental reasons for starting the entrepreneurial path (McMullen, 2017).

The perseverance of this idea to not change is aligned with the entrepreneur adopting a vertical integration of the value chain through the engagement of external stakeholders who share an indifferent belief from the entrepreneur (Kirtley, 2020). The notion of pivoting away from ones passion to represent re-branding or adjustment to the offerings is acceptable however, when the pivot is significant to divert from the passion of the female entrepreneur, then pivoting is seen to undermine passion and affect the long-term success. The ideation that female entrepreneurs can obtain short-term success through pivoting the long-term success however, depends on the enjoyment and fulfillment experienced by the female entrepreneur. The contrast of viewing pivoting in a negative light with regards to female entrepreneurs' passion is dependent on the idea that sacrificing passion is

sometimes a necessity and proves beneficial but excessive pivoting is detrimental (McMullen, 2017).

Through this process of probing, new ideas are generated and encourage the pivoting capabilities whereas the reluctance to probe an opportunity that will reshape the organisation means the female entrepreneur undergoes the process of perseverance. A business idea gains the greatest traction when the idea is analyzed from customer feedback and external stakeholders that are within the female entrepreneurs' network but more importantly, the engagement with stakeholders not within the female network opens the avenue for information transfer and potential of solutions and ideas are unlimited thus having the potential to drive the female entrepreneur to pivot (Leatherbee, 2020).

The fundamental insight for this research study arises from the theoretical study that no significant relationship is demonstrated through the vertical diversification and a level of EO towards risk propensity and the entrepreneur reacts unfavorably to strategic changes involving threats or problems.

*H3: EO Innovation is positively significant for perseverance through vertical diversification.*

Further emphasis from prior literature established leverage of opportunity as a driver for young entrepreneurs to conduct strategic pivots through a strategic addition of an unanticipated opportunity arising from the enactment of a founding opportunity. The founding opportunity provides the entrepreneur with an existing team of members and existing infrastructure that provides the grounds for the unanticipated opportunity to be recognised (Kirtley, 2020).

The extant literature explained the impact of conducting business research through the scanning process has a meaningful effect on the passion exhibited by the female entrepreneur and thus boosts the ability for strategic changes. The passion for innovation requires the identification of opportunities for exploitation, the commercialisation of products or services and the nurturing of the organisation for

growth. Particularly relevant for small organisations is to make conscious decisions that drive the reorientation of the organisation's strategic direction by restructuring of resources, processes, activities and the areas of attention (Cholula, 2021).

According to Leatherbee (2020), the adoption of a lean-startup faces resistance when the female entrepreneur has a formal business education and practices the learning by thinking method which is grounded in frameworks, market reports and data analysis thereby practicing caution for new business ideas and failure to probe an idea. Consequently, learning by doing is easily adopted by female entrepreneurs without formal education as reliance is placed on business experience. The diversity of formal education that is not grounded in business faces the potential of errors in the business idea created through the probing of an idea within a homogenous network. The challenge female entrepreneurs need to overcome is the limitation imposed by educational qualification. The holders of business qualifications can achieve extreme success by the implementation of probing as the potential opportunities available are exponential and coupled with the qualification levels, the business acumen and knowledge result in greater changes to business ideas ultimately leading to continuous pivoting (Leatherbee, 2020).

Early-stage entrepreneurs are considered to have pivoted after undergoing a series of strategic exits and additions as opposed to making a single decision to reorient the business strategy. A strategic decision about existing a product or market involves the realization that the original strategy was flawed thus creating a gap and is addressed by the uptake of an opportunity that constitutes a strategic addition (Kirtley, 2020). The market effect of seeking opportunities within the current market boosts passion and improves strategic changes. The scanning of information from the environment creates an information database that allows the female entrepreneur to evaluate new information for an alternative based on value and strategic fit, thus, the organisation that has intensive scanning ability will improve the information gathered and have more opportunities (Cholula, 2021).

The scarcity experienced in start-up female entrepreneurs' reputations based on network capacity, the availability of time to make decisions, impacts the choice of

alternatives available. The salient process of learning for established entrepreneurs relates to the ability to leverage from the experiences through the years of operation and access to company data aids in the choices of alternative strategies that can be implemented. Conversely, the difficulty of learning is experienced with start-ups (Gans et al., 2019). The type of business planning required to improve the chances of business survival for a new venture is to be frequent and agile thus ensuring the planning activities are encouraging to strengthen the internal organisation teams unity and provide the female entrepreneur with a level of direction and control that can be utilised to navigate during the moments of uncertainty (Giones et al., 2020)

*H4: EO Innovation is positively significant for pivoting through strategic changes*

*H5: EO Innovation is positively significant for pivoting models in female entrepreneurs.*

## **2.7 Covid-19 Impact on Resilience of Female Entrepreneurs**

The nationwide lockdown imposed financial difficulty for SMEs by facing the burden of depleting cash flows. According to Seah (2021), research conducted on the attitudes to pursue a startup business has increased when the lockdown eased. This study conducted in Singapore is significant for this research study as it highlighted women entrepreneurship rates have increased. The female entrepreneurs' intention to start a business and continue operation during the pandemic is related to TPB which considers the female entrepreneurs' intention to pursue a career in entrepreneurship through the attitude of motivation, the influence of social environments and situations and the perceived behavioral control which examines the female entrepreneurs' ability to control the performance of their behaviour (Nikou et al., 2019).

Women attitudes towards power and achievement were heightened by the pandemic and created opportunities to spur entrepreneurship. In addition, the trend is seen in pursuing online business whilst the tourism industry was severely affected by the lockdown regulation (Seah, 2021). The importance of online selling through social media created new networks and business avenues for female entrepreneurs

thereby embracing the digital marketing strategies for business survival (Sultan & Sultan, 2020). Female entrepreneurs demonstrating resilience during Covid-19 have underscored consequences for SME's business survival and development. A critical decision about the long-term strategic direction of the business are faced by many female entrepreneurs with the decision to respond first for short-term survival at the onset of the pandemic and then develop the strategy in response to the exogenous shocks (Herbane, 2019).

According to Sultan & Sultan (2020), the innovation strategies adopted by female entrepreneurs for business survival related to cash management strategies to reduce unnecessary costs and application of loans to facilitate the cash flows required to allow the business to grow to attract customers. Through the reflection, learning and adjustment of actions, the full impact and consequence of the crisis were understood and although many have been unprepared to deal with the crisis due to the absence of resilience plans or crisis management procedures, the female entrepreneur can survive through resilience (Herbane, 2019).

A practical action performed by the female entrepreneur that displays frugality is the reduction of short-term liabilities, renegotiation of debt obligation, reduction of financial expenses and the retrenchment of employees. The female entrepreneurs are successful when the timing for an investment of new resources is conducted in a manner that enables the innovation opportunities to yield long-term performance benefits thus contributing to the business' sustainability to survive the crisis by becoming more prepared to tackle future exogenous shocks (Giones et al., 2020).

Female entrepreneurs are risk-averse thus promoting the adoption of a long-term approach. The actions implemented lean towards building organisational resilience for the long-term benefit instead of focusing on the short-term unplanned solutions required for survival during the pandemic (Krammer, 2021). The impact from a long-term focus is the reason for female entrepreneurs displaying behaviours that are less likely to result in quickly adapting the business models and making operational changes. In an uncertain environment created by Covid-19, the response to changes in technology results in an enhanced focus of innovation to enable the organisation

to align the strategy to the organisation's structure (Mckenny et al., 2018). The pace of adaptation is generally described to occur in incremental changes, therefore, in environmental uncertain times, the female entrepreneurs are unlikely to make significant or rapid changes to shift the organisation into an alternative position (Mckenny et al., 2018). As explained by Krammer (2021), female entrepreneurs tend to adopt a wait-and-see approach before undertaking strategic commitments.

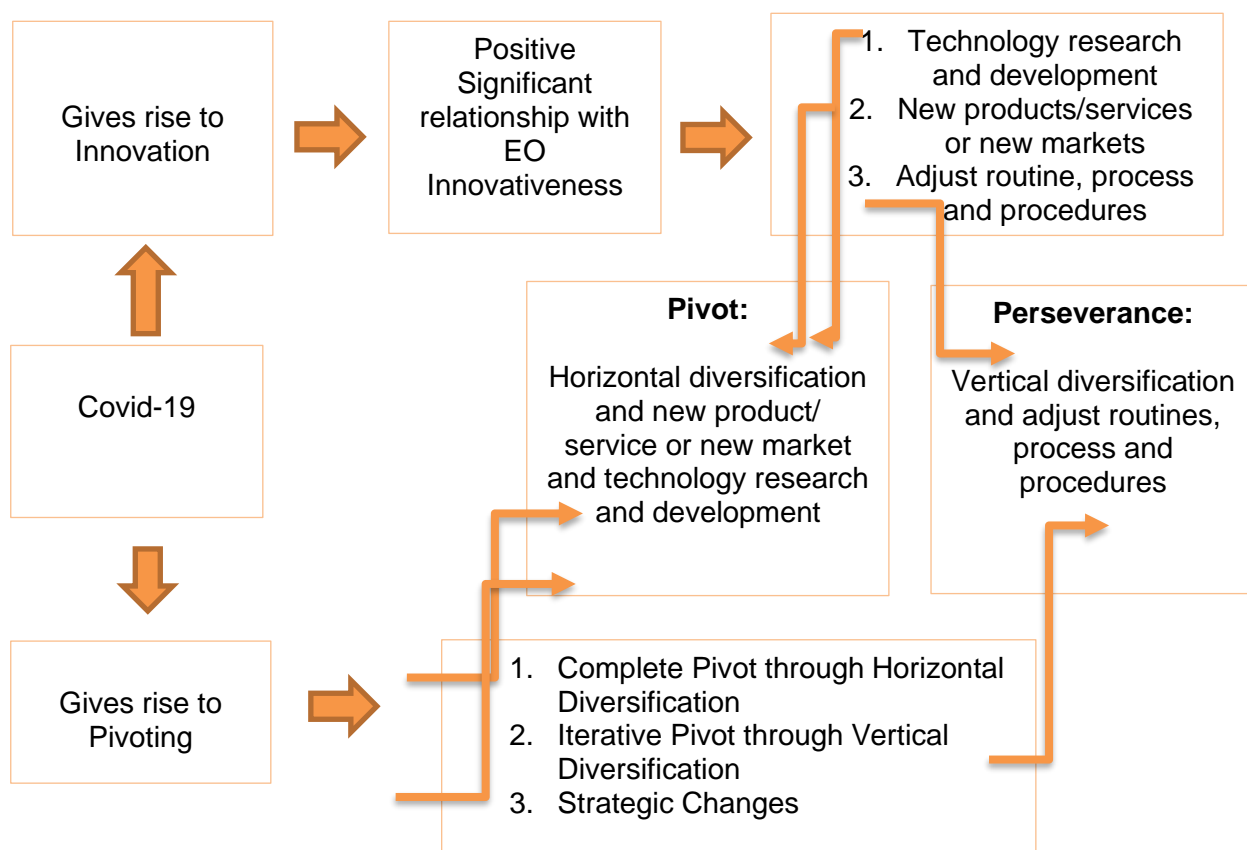
Further opportunity and flexibility strategies created a new avenue for female entrepreneurs to provide a solution to the pandemic through the industries of producing masks and sanitizers. The female entrepreneur that was multi-skilled and had flexible business operations were able to manage the new situation. The expansion of the digital environment gave advantages to female network platforms to provide support to each other and contribute to the sales of each other through the inter-purchase mechanism (Sultan.S & Sultan, 2020). The established female entrepreneurs are more capable to deal with crises based on experience and development of procedures during the business lifecycle have created resilience activities to support a growth-survival maturity outlook. Nonetheless, the resilience activities can be either documented formally or in the absence of formalization, the strategic plan is known to the female entrepreneur (Herbane, 2019).

The differentiation of female entrepreneurs' responses constituting a rational human action compared to impulsive reactions is challenging during the context of the pandemic. The Covid-19 crisis resembles the entrepreneurial behavior exhibited during a natural disaster. In this manner, the productive and unproductive actions undertaken by the female entrepreneur occur irrespective of the challenges faced in obtaining and processing information for factors that would have generated a rational and organised response (Giones et al., 2020).

The pandemic caused the female entrepreneur to perform cost-cutting actions to reduce the financial loss experienced therefore, these actions changed the resources and attention of the female entrepreneur. Through these actions, a level of risk to pursue opportunities for survival was prompted. The impact of resources improves the understanding of the expectation from the market and utilizing the adaptive

capacity thus promotes EO and results in the female entrepreneur experimenting less whilst exploiting more options based on the lowered uncertainty (Eshima & Anderson, 2017). Female entrepreneurs in South Africa who exhibit SE are flexible, willing and able to change to achieve business success hence, this is achieved by gaining new knowledge and leveraging current knowledge to change the product mix, expand product platforms or change the process completely. The influence of innovation-directed activities and behaviors enable the female entrepreneur pursuing SE to seek opportunities as a disruption to existing industry competitive conditions or seek new markets (Mazzei, 2018).

*H6: EO is significantly mediated by Covid-19 impact to influence the relationship of P.*



**Figure 1:** Theoretical representation of the influence EO innovativeness has on the ability to pivot or perseverance model.

## 2.8 Proposed Business Sustainability Framework

The proposed business sustainability framework was created after the analysis of the results obtained from the data collection.

The rapidly changing environment experienced during Covid-19 affected the survival rate of business in SA and globally. The traditional procedures and techniques explained in the literature demonstrated the process for business success when the environment is stable however the quality of a product or service in today's situation is not a trait for future long-term success (Saleh & Watson, 2017). The proposed business sustainability framework in this research study was adapted from the recent work of Giones et al., (2020) disaster management framework to apply the applicable principles to develop an action plan for female entrepreneurs to follow during the impending crisis or assist in the normal course of the business. The justification for creating a framework that is generated from results obtained during the pandemic is because the organisation formed during an exogenous shock displayed higher long-term survival chances and substantial performance levels (Morgan et al., 2020). The pivoting framework used in this research study stemmed from the adaptation of the recent pivot framework developed through the Alejandra et al.,(2021) study on the course of action start-up organisations undergo when performing pivoting decisions.

Furthermore, the proposed framework incorporated the business excellence concept under the VUCA conditions of volatility, uncertainty, complexity and ambiguity to account for the limitations of the business excellence model during the times of Covid-19 (Saleh & Watson, 2017). At the present scope of this research study, the target population was female entrepreneurs and studies on the impact of Covid-19 expect the female entrepreneur to be less likely to adapt to the pandemic. Consequently, the work conducted by Krammer (2021) highlighted no significant difference was found between male and female entrepreneurs' adaption during the pandemic considering innovation hence the proposed framework is aimed at the general population of entrepreneurs. The reason for no gender difference stems from the overall increased pressure women entrepreneurs endured during the pandemic from remote working, the obscured work-home lifestyle, and childcare and household duties, the female entrepreneurs are, therefore, less affected by the pressure created during the pandemic compared to male entrepreneurs (Krammer, 2021).

The adaption of the business excellence framework is attributed to the vision platform as part of the ambiguity. The female entrepreneur outlines the organisations' vision, mission and core values that drive the current business operations. The future aspiration for the direction of the organisation should be disclosed to ensure alignment of future resources will be addressed (Saleh & Watson, 2017). The core values of an organisation guide the design of the mission statement towards purpose-driven entrepreneurship utilisation innovation to make a nimble decision (Sun, Wu & Yang, 2018).

The resource investigation stages consist of the analysis of the current resources in the organisation and the future resources that are within the organisation's reach conducted over a short-term and long-term perspective. The future aspiration of the organisation leads to good ideas at the beginning however, these ideas develop and evolve during the entrepreneurial process which ultimately generates higher quality opportunities for new ventures, products or services. The upfront generation of ideas can reduce the time required for planning and developing these ideas upon implementation time (Frederiks, Englis, Ehrenhard & Groen, 2019). Furthermore, the required resources for researching and developing these ideas can be accessed and thus lead to the greater potential for pivoting. The acquired skills and knowledge can be attained upfront to ensure future success and mitigate future losses by yielding high-quality opportunities. The importance of future generations of opportunities is they can be shaped and altered whereas the opportunities which are driven by present and past effects are limited and unchangeable (Frederiks et al., 2019). The novelty ideas boost the need for innovation and the EO of a female entrepreneur is positively associated to promote the invention of new products and services (Li et al., 2021).

The creation of opportunities from past business experience and opportunities created in response to customer feedback has the potential to derive current solutions as well as future potential avenues. The difficulty female entrepreneurs are faced with is the solution creation that will alleviate the current problem experienced in the product or service offering therefore, the quality of the opportunity created is

weak. The impact of weak quality opportunities significantly affects the sustainability of the organisation and results in a financial loss (Frederiks et al., 2019). The proposed framework suggests that the female entrepreneur adopts a resource-conservative approach. Through this action of resource-conservativeness, the organisation has a long-term approach to achieving the business goals and is essential for business survival beyond the next two years. This is conducted by considering all current resources available that can be utilised to obtain the best option for the acquiring of new goods or services (Giones et al., 2020). The reduction of financial cost deemed unnecessary cost should be eliminated during the resource-conservation phase because resource led-businesses are adaptive and therefore able to achieve sustainability more rapidly (Sun et al., 2018).

The pandemic forced female entrepreneurs to readjust the organisations' resources to seek opportunities for survival. The benefit for established entrepreneurs was the resource accumulation that occurred during the years of operating thus enabling an adaptive capacity to utilise resources during the pandemic. The value in accumulating resources pre-covid improved the female entrepreneurs' knowledge of how best to use these resources, therefore, improving the ability to recognise changes in market conditions (Eshima & Anderson, 2017). The concept of frugality provides female entrepreneurs the mindset to bounce back from the effects of Covid-19 through the actions of resource conservation and applying economic rationality to assess the cost of acquiring new resources. The business plan developed during the pandemic may have caused the female entrepreneur to practice caution and aim for a reduced growth target due to the financial and resource constraints of the organisation (Giones et al., 2020).

In the enabler stage, the choice of a pivoting method is essential because the Covid-19 pandemic deviates from the resource accumulation principle into a dynamic capability mode where the female entrepreneur discovers the importance of innovation, learning and a good strategy (Solano et al., 2018). The generating options and seizing and testing stages are interdependent on the ability of the female entrepreneur to generate options, gather information and test each option for viability through experimentation (Alejandra et al., 2021). The path towards a successful

strategic change is dependent on the cognition of the female entrepreneur to use prior knowledge and experience that enables the recognition of patterns within the industry, environment and organisation hence processing the information in a manner that promotes changes. When assessing the viability of an opportunity or conducting business research for new growth ideas, the female entrepreneur undergoes the process of scanning for new information, analysing the data to make connections between related and unrelated information whilst bearing a level of judgment when evaluating the information (Cholula, 2021).

In the commercialisation process, business models convert the inputs of technology into outputs for the consumers and economic growth. When entering emerging markets, the structure of the business model implemented is important to achieve the matching between technology and the business model (Rask et al., 2020). The early-stage entrepreneur involved in start-ups undergoes the creation of a new business model given the recent establishment of the business therefore, there is no business model formulated. The business model transformation occurs when the existing model is changed to a new business model however the business model diversification is particularly important for this research because of the addition of a new business model to the current business model that remains operational (Geissdoerfer et al., 2018). The complexity of female entrepreneurs adopting a business model diversification strategy arises from firstly, failing to identify the suitable business model to use for new technological issues and secondly, from the conflicts experienced between the current and the new business model (Geissdoerfer et al., 2018).

The shortcoming for the Test Two Choose One framework when considering viable options is dependent on the preference of the female entrepreneur where the benefit is derived from testing one strategy thus implementing immediately compared to the female entrepreneur that finds various conditions optimal and displays difficulty in the abandonment of their idea. The factor to consider when creating a viable alternative option stems from the notion numerous paths exist to create and capture value due to constraints from resources such as funding and credit availability for the purchase of supplies. These constraints work in a manner that prevents the pursuit

of more than one alternative at a time (Gans et al., 2019). The last stage of reconfiguration is the process of adjusting the resources of the organisation to enable the change to be implemented and hence a business model is changed (Alejandra et al., 2021).

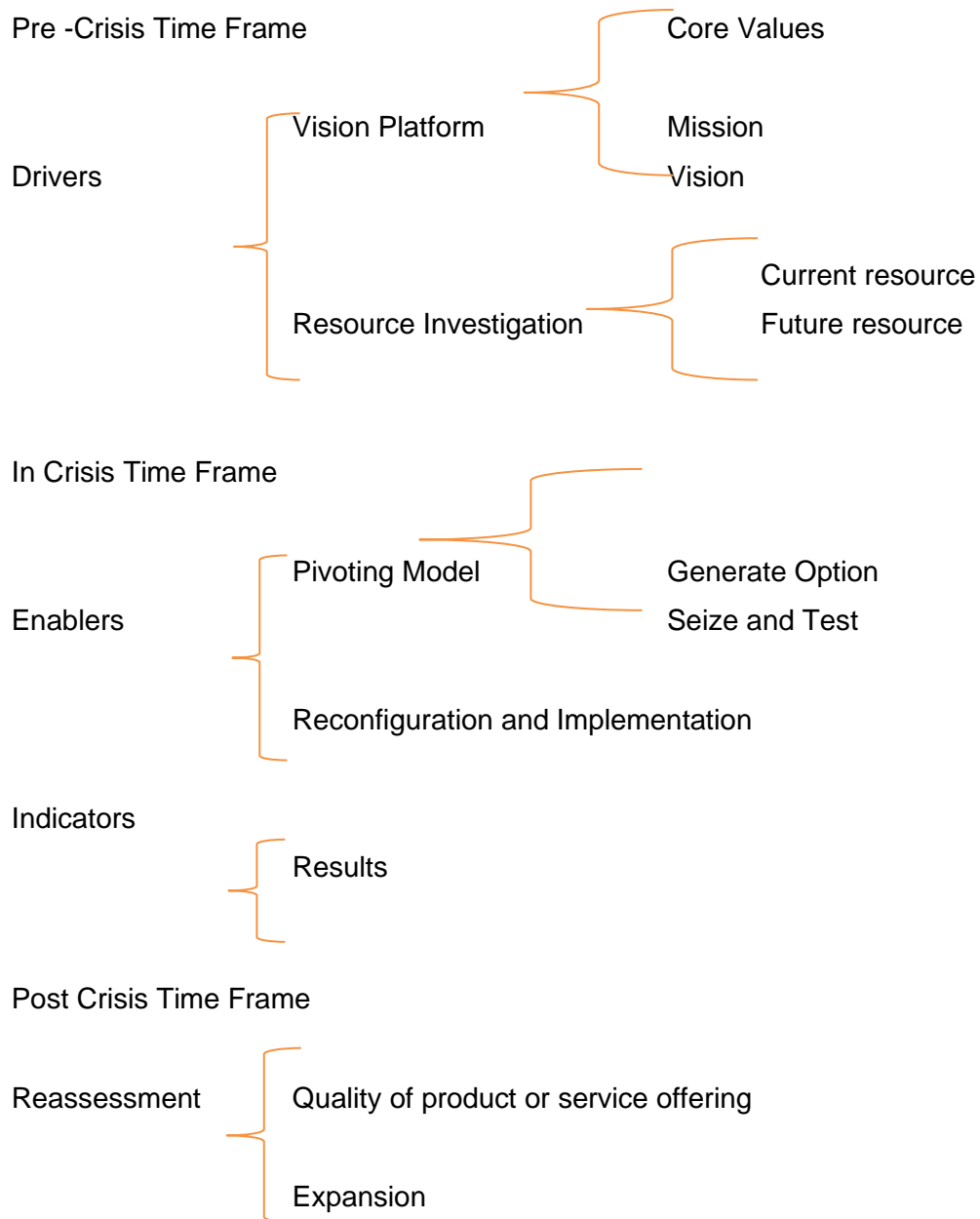
The indicator stage entails reviewing and analysing the results obtained from the implementation of the business model. At this stage, the outcome for success is great when the market orientation strategy is aligned with the product or service offering created through innovation and the female entrepreneurs' EO is positively impacts the affect (Solano et al., 2018). However, Sun et al., (2018) highlighted failure is critical in fostering innovation during uncertain periods because the customer preference and market conditions can change from the time of resource investigation stage. Nevertheless, the female entrepreneur is prompted to reassess the drivers of vision and resource investigation to identify potential avenues or discrepancies in the new offering that may require further correction.

The post-crisis stage can be analyzed through the business environment after the pandemic and will benefit a business that is agile and resilient by leveraging EO to use innovation for opportunity development. The efficient utilisation of resources during the pandemic provides a differentiator mechanism between an organisation that survives or fails however more importantly, determines the speed at which the organisation is thus able to create new ventures. This ultimately affects the organisations' growth and survival for a long-term period. Further, the long-term effects of digital technology and business models are considered vital during periods of volatility and significantly relevant in the changing world after the pandemic (Belitski et al., 2021).

The expansion phase of the post-crisis stage applies to EO based on the strategic orientations required for survival during the pandemic involved entering and access into a domestic market that is unfamiliar to the female entrepreneur and thus viewed as a foreign market. EO is viewed to be the strategic posture that is crucial to survive and enable the female entrepreneur to prosper in a domestic competitive environment and affects the expansion into an international market in a similar

manner (Solano et al., 2018). The applicability of operating in an international market is similar to the operation in a domestic market whereby the company has less information about the needs and demands from customers with the organisation facing the challenge of dealing with competitors that are absent in other markets or employ different strategies and positioning in these foreign markets. The extant literature supports EO as a significant and positive association to induce the international preparation experienced by the female entrepreneur and thus positively affecting the performance of the organisation (Solano et al., 2018).

Lastly in the post-crisis stage is the discussion on the quality of the goods and services created and offered during the pandemic. Through the resource conservative approach, a frugal approach was adopted however, Giones et al., (2020) proposed post-crisis, the female entrepreneur should orientate away from frugal cost-saving quality to provide enhanced products and services to consumers. The cost-cutting mechanism during the pandemic created resources for survival thus the proposition from this research study was to maintain the level of quality of products and services offered during the pandemic because the consumers' needs and preferences have shifted from high-quality items.



**Figure 2:** The Proposed Framework for Business Sustainability for Female Entrepreneurs

## 2.9 Conclusion

In summary, the research study aimed to provide insight into the female entrepreneurs' lean-to strategic changes during a crisis and influenced by the EO. The reason why some female entrepreneurs pivot or preserve during a crisis can be

linked to the EO and pivoting through either horizontal or vertical diversification. Lastly, the research study also aimed to provide the insight that female entrepreneurs are more favorable to opportunities during a crisis and links to an innovative entrepreneurial orientation.

## Chapter 3: Research Questions

### 3.1 Research Question Overview

The research questions are designed to test the two constructs in the research study. The relationship between EO Innovation and Pivoting are the two constructs. The research question aimed to investigate the practical implication of the mediator on the relationship between the EO and pivoting constructs.

#### 3.1.1 Research Question 1:

*R1: Aims to establish a relationship between EO (Innovativeness) in female entrepreneurs.*

The research question aimed to determine the relationship between female entrepreneurs and EO innovation is theoretically viable however, the relationship will not be determined through the data collected. The continuous data for EO and categorical data collected for the female gender do not meet the requirements to test the relationship. The research question was therefore amended to understand and analyze the perception of female entrepreneurs on innovativeness and pivoting.

*H1: Innovation has a positively significant relationship for EO for female entrepreneurs during Covid-19.*

#### 3.1.2 Research Question 2:

*R2: Aims to establish a relationship between EO (Innovativeness) and the pivoting models in female entrepreneurs.*

The extant literature described pivoting as a model for horizontal diversification, vertical diversification and changes to strategic decisions. The relationship between EO innovativeness and each of the pivoting models will be tested and evaluated for the significance of the models. Each pivoting model is disclosed as first and second-order constructs as highlighted in Figure 13. The analysis from each relationship is

vital in the discussion to determine the pivoting impact and direction of female entrepreneurs. The pivoting impact considers the actions taken by the female entrepreneur if such impact was received hard or considered incremental. The pivoting direction considers the change to products or services, changes to channels of distribution and online platforms and changes to business proposition resulting in business model changes.

The author further through the research questions will be able to determine the combined effect of pivoting on EO innovation in female entrepreneurs through the testing of the relationship of the constructs.

*H2: EO Innovation is positively significant when adopting horizontal diversification for pivoting.*

*H3: EO Innovation is positively significant for perseverance through vertical diversification.*

*H4: EO Innovation is positively significant for pivoting through strategic changes.*

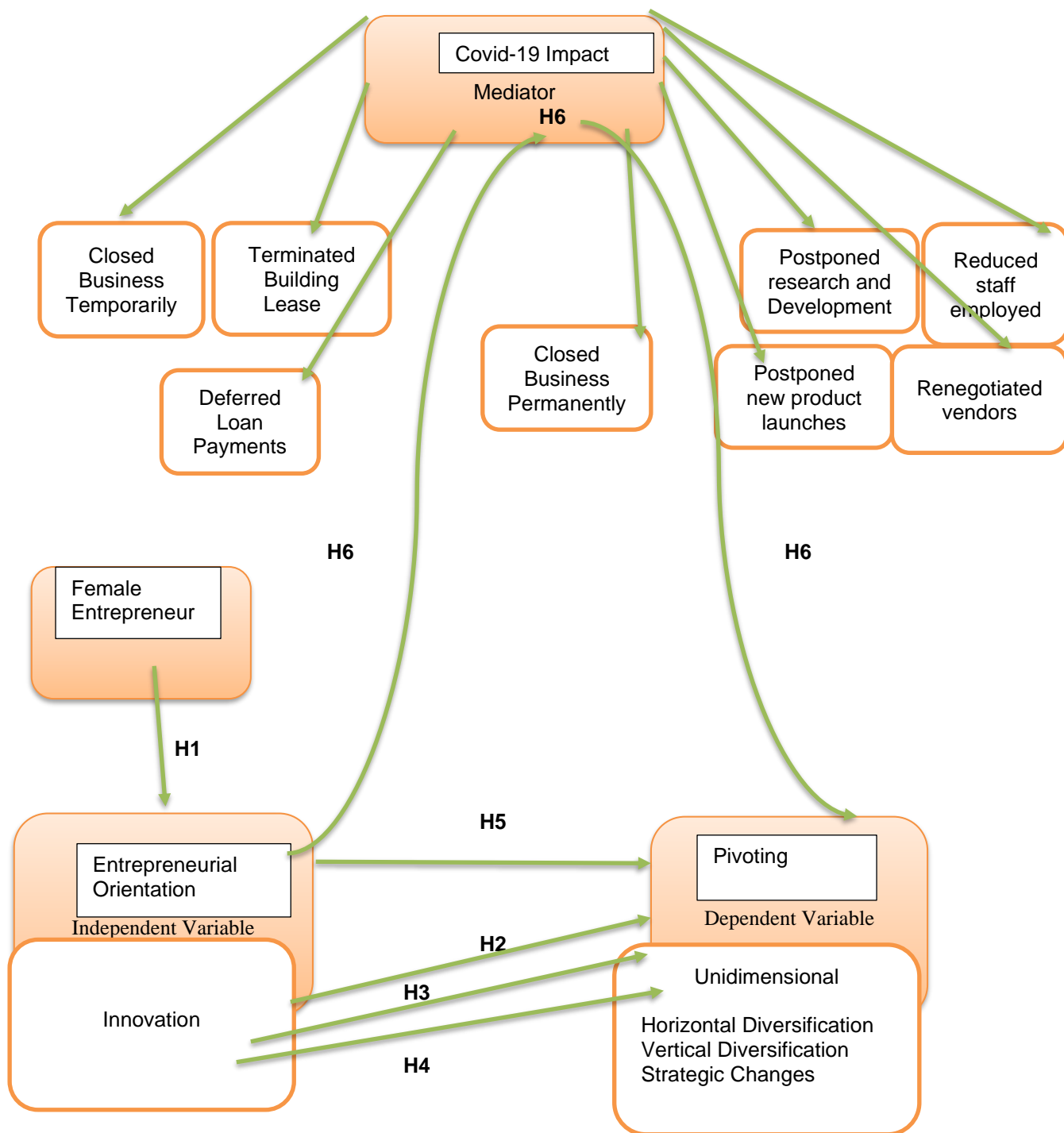
*H5: EO Innovation is positively significant for pivoting models in female entrepreneurs.*

### **3.1.3 Research Question 3:**

R3: Aims to investigate whether the Covid-19 impact mediates the relationship between EO innovation and pivoting.

The mediator relationship can be considered only if the relationship between the EO innovation and Pivoting is significant during the direct effect analysis. The indirect effect of this relationship enables the testing of the mediator to establish if a partial or full mediation is possible. The cost-cutting actions and business operation factors make up the Covid-19 Impact on female entrepreneurs.

*H6: EO is significantly mediated by Covid-19 impact to influence the relationship of P.*



**Figure 3:** The Proposed Model for the Research Conducted before the Collection of Data (Green arrows represent a significant relationship)

## **Chapter 4: Research Methodology**

### **4.1 Research Methodology and Design**

The research design was descripto-explanatory in structure and aimed to utilize the descriptive data collected to explain the relationship between variables selected. The explanatory aspect of the design structure involves a statistical test of correlation to investigate the relationship between variables (Saunders & Lewis, 2012).

The research onion analogy links the outer layers of the methodology design by determining the philosophy to the approach of theory development. A positivism research philosophy was considered due to the highly structured approach that allows replication of data required for generalization. These generalizations aid the research in explaining behavior between variables through the construction of the hypothesis (Saunders & Lewis, 2012). As a positivist researcher, the aim was to maintain a degree of freedom in the design of the research study, devise the measures, data collection and the analysis of the data to not influence the outcome of the research (Anderson, Wennberg & McMullen, 2019).

The approach to theory development was a deductive approach. This approach involved the testing of theoretical propositions to establish the causal relationship between variables through the process of replication (Saunders & Lewis, 2012). Self-replication is extremely important in the theory testing approach such that the research design and variable are the same (Anderson et al., 2019).

The choice of methodology was a mono approach utilising a single technique for data collection through questionnaires via surveys (Saunders & Lewis, 2012). The survey research design is perfectly suited for self-replication for theory development (Anderson et al., 2019). The use of a survey method is cost-effective and can be widely distributed.

A questionnaire is the format of a survey whilst remaining conscious of the length of the survey to be appropriate and not lengthy (Saunders & Lewis, 2012). The design of the survey had a mobile-friendly layout for respondents accessing the link through

mobile devices. The survey was created using Google Forms because of the ease of creating surveys and the access to standardized survey templates (Mei & Brown, 2018). The disadvantage of using self-administrated surveys which are done without an interview from the respondent can result in a low response rate. The reasons for low response rates are attributed to either outdated email addresses, emails received in a spam folder or the willingness of the respondents to participate in the completion of the survey (Sultan.S & Sultan, 2020). The advantage of using online surveys through Google Forms is the data is automatically exported into a Microsoft Excel format and aligns to the required file formats required for the statistical software of SPSS (Newman, Mount & Shao, 2021).

A cross-sectional research design was applied to the collection of data over one period (Saunders & Lewis, 2012). A quantitative study was conducted through an ordinal and nominal survey which was numerically coded and applied to statistical testing (Saunders & Lewis, 2012). The survey was structured and available through a self-administrated online survey.

#### **4.2 Population**

The population consists of the entire group of members who display the homogenous characteristics required for the research (Saunders & Lewis, 2012). The population consisted of female South African entrepreneurs that are accountable for the strategic decisions in the business. The EO construct was a strategic level analysis of the business and the respondents provided data on the business. The importance of selecting the appropriate population is conscious of the fact that strategic awareness dimensions within lower levels of the organisation (Covin & Wales, 2019).

The organizational size and industry of operation had no restriction on the population to obtain a level of generalization in female entrepreneurs. The literature indicated the typical female entrepreneur industries that were affected during the pandemic however, the author selected a variety of industries to highlight the expansion of female entrepreneurs into new industries (Manolova et al., 2020). The number of businesses held and the number of years in business differentiated between a young female entrepreneur and a serial entrepreneur. The educational knowledge of female

entrepreneurs affects the decision-making capabilities and the population consisted of a variety of educational levels (Bernoster et al., 2020). Thus, to determine the relationships between EO, Pivoting and the Impact of Covid-19, the generalised population was utilized to allow for an extraction of a broader sample and therefore enabled a more realistic conclusion to be deduced during the research study.

### **4.3 Unit of Analysis**

The unit of analysis was the individual that was analysed for the research study. Through the survey approach, the respondent of the survey constituted the unit of analysis. The research attempted to establish if female entrepreneurs pivoted during Covid-19 for survival, therefore, the unit of analysis was centered around female entrepreneurs.

### **4.4 Sampling Method and Size**

A sample is described as a subgroup of the members of the population. A sample is a required group to be tested from the collection of data instead of attempting to test the entire population. The evidence for sample testing relates to the time and financial constraints that are utilised for sample testing being reduced (Saunders & Lewis, 2012).

The importance of sample size in entrepreneurial research relates to the level of judgment derived from the sample. A relatively small sample creates results with false positives whereas larger samples yield statistically significant results (Anderson et al., 2019). The sample size aimed for this research study was between 120-200 respondents to satisfy the requirements for a mediator variable. The achieved sample size was 91 respondents over four weeks. The target population for female entrepreneurs is relatively small in South Africa with the effort taken to achieve 91 responses comprising of 257 emails sent to respondents. In addition, 46 Instagram messages, 19 Facebook messages, 32 LinkedIn messages and 293 Whatsapp messages were also sent. The researcher was conscious of a sampling bias when respondents were selected for participation. The evidence from the literature highlighted the survey can be skewed towards a demographic group, hence the

researcher selected participants from various industries and a wide demographic group (Newman et al., 2021).

A sampling framework will not be feasible for this research study, hence a non-probability sample technique was applied. A quota sampling method ensured the required sample will represent the characteristics aimed for this research study (Saunders & Lewis, 2012). The quota aspects for this research study were the age of the entrepreneur, the industry the entrepreneur operated in and the number of years of the firm. The incorporation of a volunteer sampling technique was applied to account for the data privacy changes according to the Protection of Personal Information Act (POPI). The researcher amended the inclusion of the volunteer sampling technique to accommodate the random participants that volunteer to participate in the survey (Saunders & Lewis, 2012).

#### **4.5 Measurement Instrument**

The measurement instrument used was a survey utilising a 7-point Likert type question approach. The Likert-type scale ranged from strongly agree to strongly disagree for each of the construct-related questions to test the level of agreement. The independent variable EO for the Likert-type scale was constructed based on work by Covin & Slevin (1989) and Bolton & Lane (2012) for the construct of innovativeness (Covin et al., 2020). The author factored in the volunteer sampling technique that was used for the distribution of the survey. This resulted in the EO construct requiring measurement at an individual level and at small business owner level. The individual-level consisted of sole proprietors that represented the business and the Bolton and Lane (2012) scale was adapted to accommodate these respondents. The necessity for the distinction relates to the strategic decisions of the individual and the strategic decision of the business (Bernoster et al., 2020).

The Covin and Slevin (1989) EO scale was adapted to measure the small business owner that employs staff, and the strategic decisions of the business can involve relevant stakeholders thus, not solely dependent on the strategic direction of the owner (Bernoster et al., 2020).

The pivot constructs were adapted from the literature that distinguished between the iterative pivot (vertical diversification) and the complete pivot (horizontal diversification). These ideation were obtained from exemplar sources of Greve (1998b, 2002) and Bajwa (2017) for iterative pivot and complete pivots respectively (Wood et al., 2019).

Informed consent was part of the survey to ensure the voluntary participation of the respondents (Saunders & Lewis, 2012). The structure of the survey was designed to include the constructs and the sections were marked. The format of the survey consisted of the below:

- A biographical section: Questions that related to the age of the entrepreneur and city location for business operation.
- Control variable: Question that related to the industry of operation, the number of years of experience, the number of businesses held, the organisation size and the level of education. The control variables were categorical in nature and to account for the idiosyncratic effects the application of fixed effects was applied through the test. The effect of the pandemic on the various industries was considered hence the fixed effect was applied to industries and educational levels (Krammer, 2021).

The next section of the survey addressed the constructs of the research study:

- Dependent variable– The entrepreneurial strategic pivoting methods were elaborated to establish which option is aligned for survival. The dependent variable consisted of ordinal data and the 5-point Linkert scale was used.
- Independent variable- The EO variable of innovativeness was elaborated in different sections of the survey to address the specific aspects of the construct. The independent variable consisted of ordinal data and the 5-point Linkert scale was used.
- Mediator variable– The impact of Covid-19 on business actions taken by the female entrepreneur. A multiple response method was used which generated categorical data. This type of data resulted in the mediation experience data

errors on IBM SPSS. The data collected was thus proposed to establish a moderator effect because SPSS accepts categorical data for moderation testing.

- Comment section- An open comment section was included to allow participants the opportunity to provide practical business thoughts applicable to the research.

#### **4.6 Pre-Testing**

A pilot test was conducted to access the survey for functionality and ensure each of the answers in the survey are recorded accurately. A covering letter was drafted to accompany the survey to explain the requirements of the pilot test and advised the respondents to provide feedback. The feedback from the pilot test was accessed to determine the changes required to the survey before final distribution (Saunders & Lewis, 2012).

A sample size of ten respondents were used for the pilot test. The feedback received related to the excessive time allocation of 30 minutes on the original survey. The recommended time for completion of the survey was between 10-15 minutes, therefore, this change was implemented for the research test. The understanding of the questions and the ease of responding to each question were included in the feedback, thus, no changes to the questions were conducted.

#### **4.7 Data Gathering Process**

The survey was distributed online using a link to the website that enabled the respondent to access the hyperlink for the questionnaire. An online survey tool was created for the efficiency and ease of retrieving the survey results and simple nature for the respondents to complete. The hyperlink for the questionnaire was directly emailed to the respondents participating in the survey. The email to respondents was first conducted to notify the respondents in advance that an email with a hyperlink to the questionnaire was to be sent shortly. The cover email was created when distributing the questionnaire hyperlink. The cover email included the name and address of the respondent, the date and a brief understanding to demonstrate

what the research study was about, the confidentiality assurance for the respondents' answers and finally, how the results from the survey would be utilised. A final step was completed a week after the hyperlink to the questionnaire was emailed to the respective respondents to either convey the researchers' appreciation for completing the survey and as a kind reminder to the respondents that are yet to complete the survey (Saunders & Lewis, 2012).

This approach was applied to the institutions involved in entrepreneurship that consented to participate in the distribution of the survey. This method granted the researcher access to a large database without violating the POPI Act.

The researcher, based on the changes of POPI, had included the distribution of the survey through social media platforms. The platforms used included LinkedIn, WhatsApp and Facebook. The researcher aimed to research female entrepreneurship networks through this medium. An important aspect before data collection commenced was the ethical clearance approval required from GIBS University. The researcher began collecting data from the 16<sup>th</sup> September 2021 till the 18<sup>th</sup> October 2021.

#### **4.8 Ethical Requirements**

The survey was conducted with appropriate ethical standards. The application of anonymity was applied. The identity of the volunteering participant was not disclosed in the survey and was therefore unknown to the researcher. Further to the application of anonymity, no signatures were required from the participants however, the survey was designed to incorporate a consent form. This consent form provided the agreement of the participant in completing the survey (Saunders & Lewis, 2012).

#### **4.9 Analysis Approach**

The application of simple regression analysis conducted through statistical software is appropriate for testing hypotheses in a sequential manner that is formulated on a theory-based approach. This method allows an analysis of the influence of the dependent variable on the independent and mediator variable (Cannavale et al., 2020). The simple linear regression model provides an understanding of the

relationship between the dependent and independent numerical variables. The test to determine whether the relationship between the construct is significant is evident through the correlation coefficient thus aiding in the assessment for hypothesis testing (Wegner, 2016).

The Hayes Process model was conducted for the analysis of the moderator because the independent variable is the predictor of the dependent variable. The moderation effect was determined through the interaction value to determine if a significant effect was established.

#### **4.10 Data Coding**

The data coding involved the conversion of the data into numerical form. The automatic re-coding function was utilised in IBM SPSS. The data coding for the survey is disclosed in Appendix A which represents the complete survey and questions with the corresponding numeric codes.

#### **4.11 Data Editing**

The data from the survey was captured in Microsoft Excel to edit the data collected from the other options listed in the survey. The respondents were able to select the other options for industry and geographical location since the main industries and locations were listed by the researcher. The other option was included in the survey to account for the random sample participation. The two edited questions were then included in the data coding sheet outlined in Appendix A. The Covid-19 impact on female entrepreneurs data from section 5 was coded in Microsoft Excel to account for the multiple responses per respondent. The coding was applied based on the dummy variable principle that represents No response = 0 and Yes response = 1. The conversion of this categorical data was then uploaded into IBM SPSS for analysis.

#### **4.12 Statistical Analysis Background**

The design of the survey was facilitated in a manner where section one collected categorical data about the female entrepreneur for the analysis of the descriptive statistics. The data about the constructs in sections two to four represented ordinal

data. The last section, namely section five, related to the mediator variable, collected categorical data through a multiple response question design. The data collected in sections two and four provided the accurate data for the inferential statistics to be conducted by fulfilling the continuous data required. The Likert scale of the five-point scale was used to assess the level of agreement by the female entrepreneur. The advantage of employing the Likert scale for a quantitative study is the ease of conducting tests in SPSS due to the importance of continuous data being a requirement for the majority of the test.

The data collected in section five of the Covid-19 Impact consisted of categorical data which was raised as problematic during the inferential statistics performed. The error of the survey design failed to understand continuous data was required for the assessment of a mediator variable. The categorical data collected from section five was able to be tested for a moderation effect because the moderation variable can be either continuous or categorical. The data generated from the survey was retrieved using Microsoft Excel, which allowed the data editing to proceed. After the completion of the data editing, the file was uploaded into IBM SPSS for the statistical test.

#### **4.13 Descriptive Statistics**

Descriptive statistics were conducted on the 91 respondents. The data collected contained categorical and ordinal data. Section one of the survey dealt with the understanding of who the female entrepreneur is, hence the categorical data was analysed using frequencies and percentage frequency results to interpret the characteristics. Sections two-four covered the constructs for entrepreneurial orientation and pivoting contained ordinal data. This data was analysed for the mean and standard deviation per question and construct. In the last section of the survey, section 5, the Covid-19 Impact construct was categorical data and was analysed using the frequencies of respondents. The statistical software of IBM SPSS was used for the analysis through descriptive statistics.

#### **4.14 Quality controls**

The application of the Cronbach alpha coefficient can be used to assess the internal

consistency of the data collected (Saunders & Lewis, 2012). Reliability can be achieved for data collection by acknowledging the potential subject error that may arise when the measurement is conducted at different times. The contingency plan to address the subject error was to send emails to respondents for the completion of the survey around the same time of the day. The time selected was around the evening to avoid stress to the respondents during normal work hours (Saunders & Lewis, 2012). The question in the survey had been adapted from literature and confirmatory factor analysis was conducted. The validity test was conducted using Pearson's correlation to account for constructs in the research study using ordinal data.

#### **4.14.1 Cronbach's Alpha -Internal Reliability of Data and Constructs**

The Cronbach's Alpha is suitable for the test of reliability when conducting surveys because the reliability estimate can be determined through a single measurement instrument such as the survey which is distributed to a group of people. The literature demonstrated an alpha greater than 0.70 is considered an acceptable reliability benchmark (Greco, O'Boyle, Cockburn & Yuan, 2018). The alpha coefficient increased when the deleted items disclosed in SPSS were removed, hence the development of the construct scale increases. The reason for the higher Cronbach alpha after deleting items related to a higher correlation level amongst a reduced number of items. The effect of removing items highlighted in SPSS is interpreted as deleting items that have a low correlation to the remaining questions forming the construct (Cho & Kim, 2015).

#### **4.14.2 Internal Validity of Data and Constructs**

The validity of the data and construct was tested through the correlation analysis using Pearson's correlation coefficient to determine the level of validity. The interpretation of the correlation analysis provides evidence of the strength of the linear association between numeric variables. The significance of a correlation effect is unable to provide evidence of a cause-effect relationship however an observed association is possible (Wegner, 2016).

#### **4.15 Confirmatory Factor Analysis (CFA)**

The confirmatory factor analysis was conducted to assess the convergent and discriminant validity of the measurement scales for each construct (Covin et al., 2020). The statistical software AMOS was used for this research study to test each construct. The first and second-order constructs of the pivoting variable were tested individually to assess the level of validity. The process of CFA causes the questions that are considered insufficient to be removed from the model to improve the validity of the constructs.

#### **4.16 Examining the Relationship between Constructs**

The relationship between the constructs was performed using Pearson's correlation to assess whether there was a statistically significant relationship for this research study. The appropriateness in applying the Pearson Correlation was dependent on the testing of two continuous variable groups. The Hayes Process model technique was used to determine and interpret the results from the moderation effects. This method of testing is considered appropriate for the moderation effect based on the categorical binary data that was collected. The Anova and T-test were conducted to provide support for the relationship between female entrepreneurs and EO. The Post Hoc Turkey test was reviewed for the significant difference found between groups for a broader insight into which groups have the largest variance and influence on the data results.

#### **4.17 Insights from a Conversation with a Female Entrepreneur that completed the Survey**

The researcher was contacted by a respondent that had pivoted their business by 300% during Covid-19. A telephonic conversation was performed to gain insight into the female entrepreneurs' action taken during the pandemic and the effect of these actions on business survival. The results are disclosed in chapter 5.

#### **4.18 Insights from the Comment Section of the Survey**

The open comment section of the survey received 16 responses. The insights from ten respondents were analysed to provide practical evidence to the research

questions. Six responses were deleted because these related to an appreciative comment after completing the survey. The results from the ten respondents are contained in Appendix D, Table 8. All significant comments have verified the status of being female entrepreneurs operating a business in SA.

#### **4.19 Limitations**

A limitation exists around the definition of EO. The first literature conceptualization referred to EO as a unidimensional strategic decision approach considering innovation, proactivity and risk-taking. The development of the alternative literature included competitiveness. The treatment of EO as a unidimensional or multidimensional construct affects the results of EO (Cannavale et al., 2020).

The research study was aimed at South African entrepreneurs and will not generate a generalization for the research study. The use of the null hypothesis, due to its simplicity and ease, can pose a limitation in the research study. The statistical significance of determining the p-value when considering the assumption of the null hypothesis is true (Anderson et al., 2019). The complete and iterative pivoting model considers information about a level of performance and no factoring of the target market and customer preference on the amount of information generated (Wood et al., 2019).

## **Chapter 5: Research Results**

### **5.1 Introduction**

This chapter presents the results obtained from the data collection and the completed statistical analysis outlined in chapter four. The descriptive statistics will be summarized to provide information on the context of the sample and illustrate the data obtained from the survey. The inferential statistical test deemed appropriate for this research will be outlined to address the hypotheses described in chapter three.

### **5.2 Descriptive Statistics**

#### **5.2.1 The Research Samples**

The entrepreneurial research describes the difficulty of small samples being able to detect statistically significant relationships thus concluding the primary concern of experiencing large effects in small samples may not yield a real effect. The stronger fallacy concept applies to smaller samples through the assumption that because a statistically significant effect is evident in the sample, the observed effect is prominent. The signal-to-noise ratio is problematic in small samples that are testing mediation thus the expected outcome leads to inflated and false results. The researcher has attempted to reduce the noise samples by selecting well-defined homogenous samples (Anderson et al., 2019).

The researcher aimed to meet the expected sample size of 120-200 respondents however due to the difficulty experienced with limited access to female entrepreneurs, a sample size of 91 respondents was used for investigation in this research study. The respondents were selected through desktop research conducted on a Google search to retrieve female entrepreneurs based on the various location and industries required for the data analysis. The research sample was selected from business network platforms and business directories which were available on social media platforms and through website scanning. The female entrepreneurs obtained through this search related to financial services, retail, consulting, events, catering and the beauty and cosmetic industries.

The desktop research was applied to female entrepreneurs that operated in the automotive, manufacturing, technology, aviation and agricultural industries. The timeline provided for the completion of the data collection and the research study proved to be limiting factors.

### **5.2.2 The Response Rates**

The response rate for the survey was unable to be accurately determined based on the selected methodology. The survey was distributed online through various social media platforms that consisted of business network groups aimed at female entrepreneurs operating within South Africa. The survey link was distributed by email to various entrepreneurship institutions for distribution to female entrepreneurs that were affiliated with these institutions. The female entrepreneurs selected through desktop research, business directories and website scanning had the online survey distributed through email and social media platforms.

The several distribution methods that were used resulted in no scientific quantifiable number of response rates that can be reliably calculated. The researcher considers the overall response rate to be classified as low based on the sample size of 96 that was achieved. The challenge with online platform surveys emphasizes the importance of participants expressing an interest in completing the survey. This is performed by a self-selection mechanism hence violating the assumption of randomness whilst prompting sampling bias (Newman et al., 2021).

### **5.2.3 The Total Sample**

The total sample size consisted of 96 female entrepreneurs who had responded to the survey. The working sample size for this research was 91 respondents that met the qualification criteria for testing was outlined in Table 1 below. The missing values from the two respondents relate to questions in Section D: Strategic Changes and have been removed for this analysis.

**Table 1:** The summary of the data collected

<b>Respondents breakdown</b>	<b>Total Number of Data Set</b>	<b>Percentage of Total Data Set</b>
Total respondents for the survey	96	100%
Total number of respondents with missing question values	2	2%
Total number of respondents failing to operate within SA	3	3%
Total number of responses used for this research	91	95%

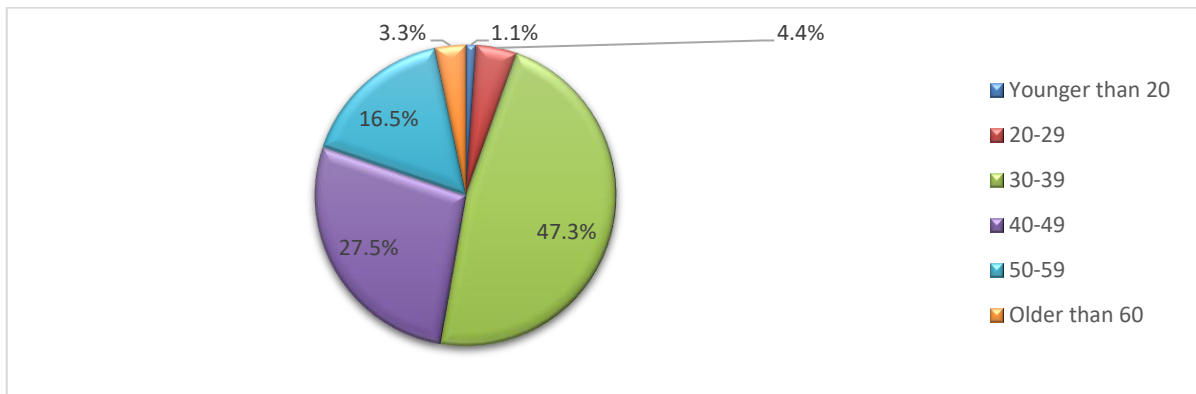
### **5.3 Descriptive Statistics for the Respondents**

The survey was designed with Section A: Biographical Details which consisted of nine questions to obtain an understanding of the female entrepreneur responses. Two qualifying questions in the survey have been used to exclude the respondents not applicable for this research study. The first question related to if the female responding to the survey was a female entrepreneur and complete agreement to this question was received.

The second qualifying question was aimed to exclude female entrepreneurs that are operating a business outside of South Africa, hence three responses have been excluded from this research study. The remaining seven questions of the survey contained descriptive information regarding the age, organisation size, education, geographical location, years of business operating experience, number of businesses held and industry.

#### **5.3.1 Age of the Population**

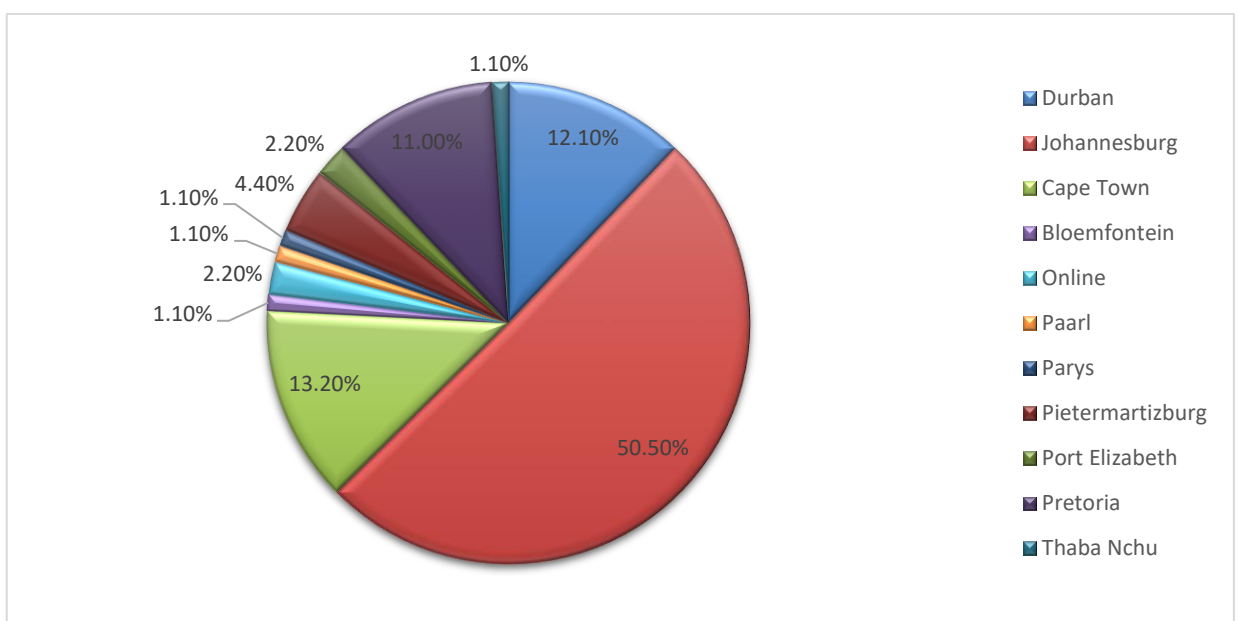
The age category of the respondents was distributed between three age groups mainly consisting of 30-35, 40-49 and 50-59, each representing 47.3%, 27.5% and 16.5 % of the sample respectively. The breakdown for age is displayed in Figure 4 below.



**Figure 4: Age of the Female Entrepreneur**

### 5.3.2 Geography

The research was centered in South Africa and reflected the distribution of the survey to the major cities. The largest respondents resided in Johannesburg, Cape Town, and Durban each representing 50.50%, 13.20% and 12.10% of the respective sample. The survey design targeted these three cities, therefore, included other location options that represented 24.20%. The breakdown of other locations represents Pretoria at 11% of the sample as a significant city within South Africa. The importance of the online location consisted of 2.20% thus no physical location can be allocated. Figure 5 below displays the data results below.

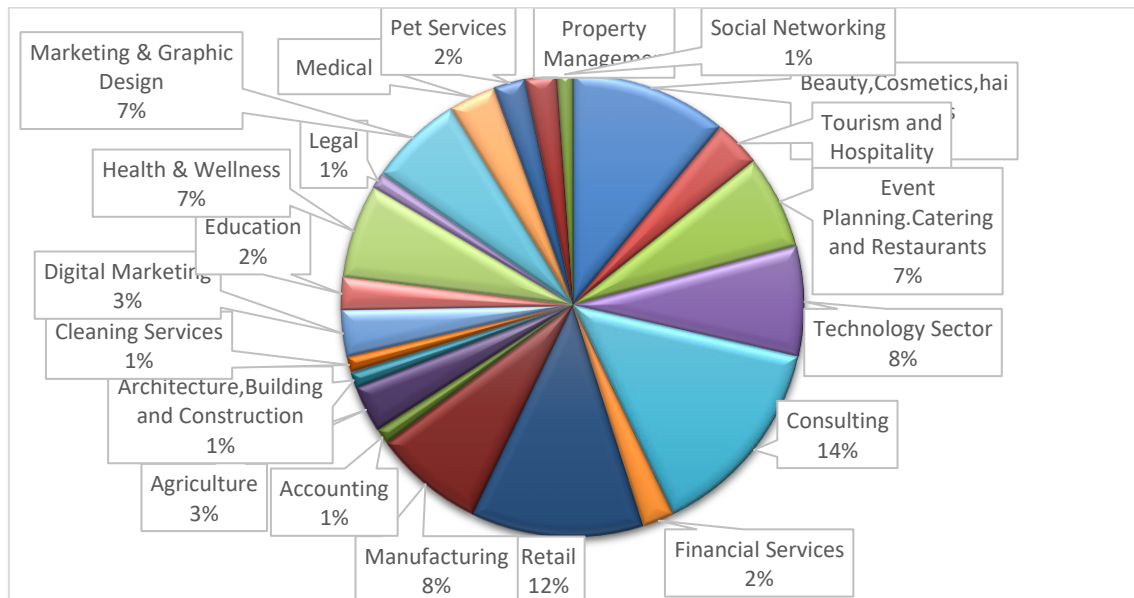


**Figure 5: Female Entrepreneurs by geographical location**

### 5.3.3 Industries Contained in the Survey

The industries outlined from the survey are highlighted in Figure 6 and the female entrepreneur industries were consulting, retail and beauty, cosmetics, hair and nails, tourism and hospitality, the technology sector, manufacturing, financial services, event planning, catering and restaurants which comprised 14.3%, 12.10%, 11%, 3.3%, 7.7%, 7.7%, 2.20%, and 6.60%. The other industry option from the survey contributed to 35.10% of the sample. The significant industries contained in the other option relates to Health & Wellness, Marketing and graphic design each contributing 6.6% of the sample.

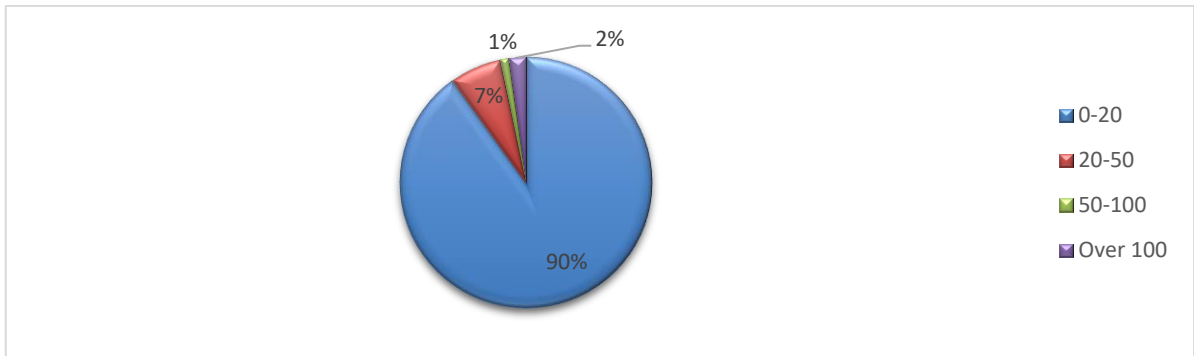
The differentiation of digital marketing of 3.30% is disclosed separately from marketing to gain understanding into the digital era penetration by the female entrepreneur. The expansion of female entrepreneurs into agriculture is growing with three respondents from the survey. Further expansion of females into new industries is highlighted in the manufacturing percentage where data is collected from the automotive, chemical and health products manufacturing sectors. The technology sector is important when considering the diversification from information technology companies to fintech and technology incubator companies, although two respondents were from these new technology sectors.



**Figure 6:** Industry Analysis

### 5.3.4 Organisational Size

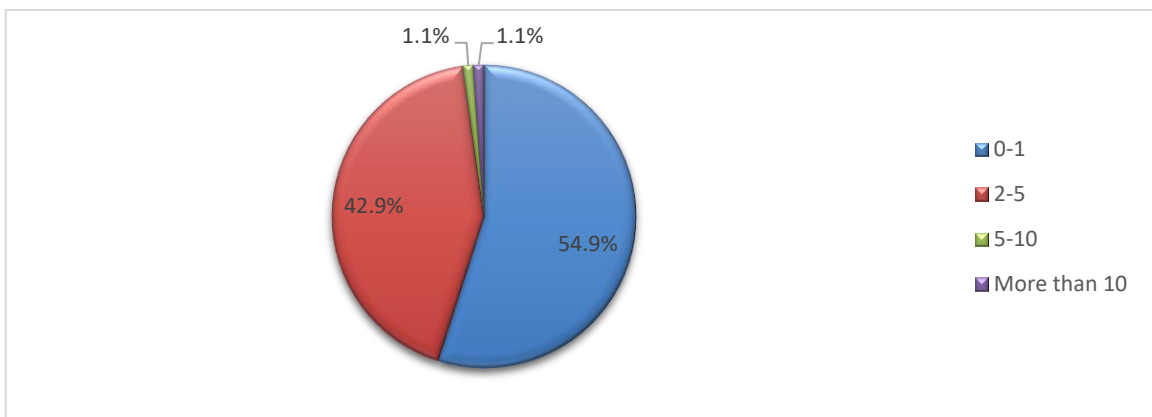
The data collected from the number of employees was used to differentiate between SME's and large organisations. The sample data predominantly contained 0-20 and 20-50 employees thus contributing to 97% of the sample distribution. The over 100 employees were represented by 2 respondents.



**Figure 7:** Number of employees in the business

### 5.3.5 Business Experience

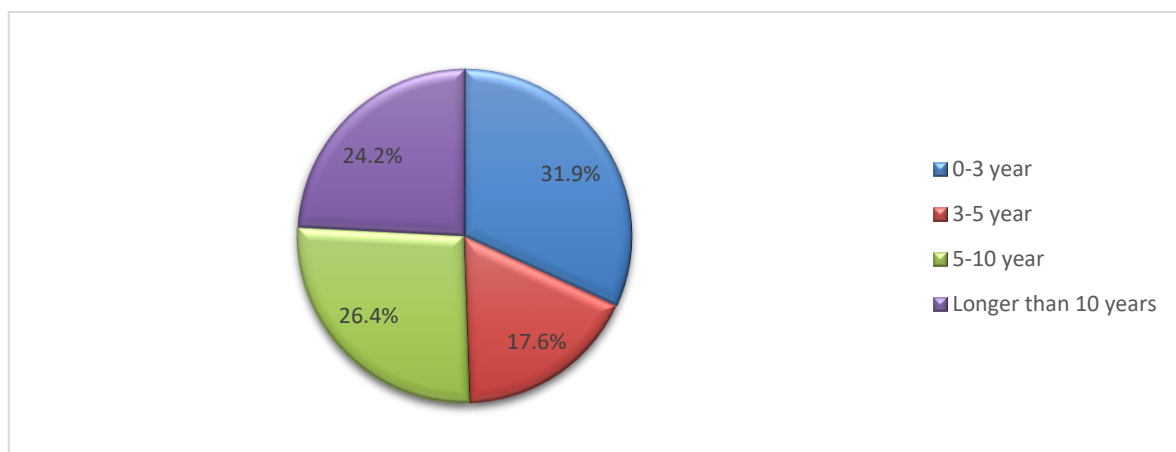
The business experience of the female entrepreneurs is displayed through the results of the number of businesses held and the number of years operating a business. Figure 7 represents the majority of the sample making up 97.8% between 0-1 and 2-5 number of businesses held. Serial entrepreneurs combine the 2-5, 5-10, and the longer than 10 businesses to form 45.1% of the sample thus 54.9% represents female entrepreneurs involved in start-ups.



**Figure 8:** Number of Businesses Held by the Female Entrepreneur

The data collected for the number of years the female entrepreneur operated in

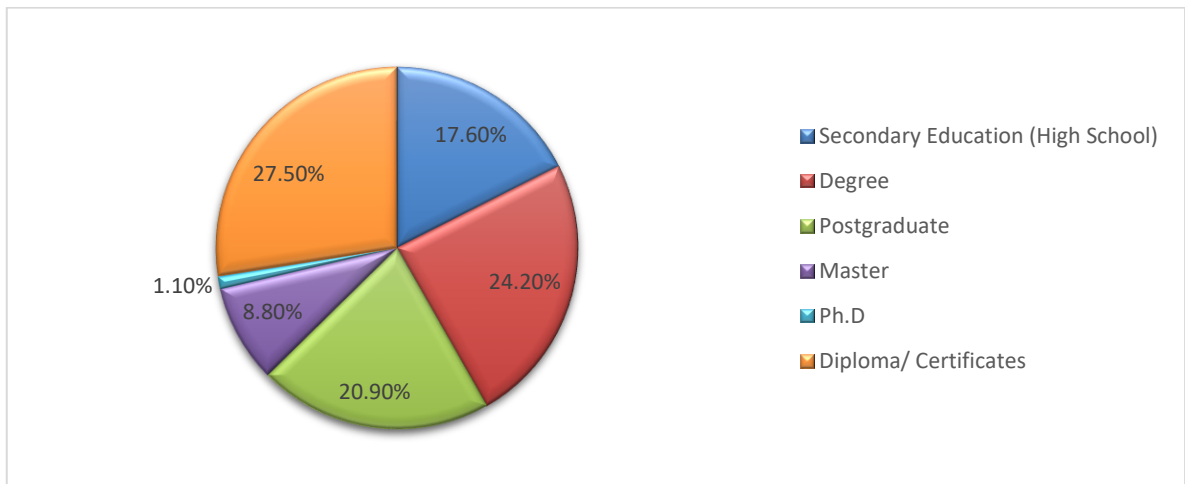
business is represented throughout the 4 categories. The early entrepreneur consists of 0-3 years and 3-5 years each represented by 31.9% and 17.6% thus contributing to 49.5%. The established entrepreneur accounts for 50.6% of the sample contained in the 5-10 year and longer than 10 year categories. Figure 9 represents the distribution of female entrepreneurs' years of business operations.



**Figure 9:** Number of years operating in business

### 5.3.6 Education Level

The various education levels for the female entrepreneurs are represented by the highest respondents achieving a degree made up of 24.20%. The percentage of respondents with minimal education background is represented by the secondary education of 17.6%. The combined effect of an educational level after the completion of secondary education is 82.5% represented by the degree, postgraduate, masters, PhD and diploma/certificates ranges. The survey was designed to include other educational levels that are 27.50% contributed to the diploma/ certificate range. Figure 10 provides a graphical representation of the academic qualifications completed by the female entrepreneur respondents.



**Figure 10:** Academic Qualifications

### 5.4 Validity

The Pearson correlation was used to measure the strength and direction of the relationship between two continuous variables. The effect of the Pearson correlation highlights the values of +1 as a positive linear correlation and values of -1 are depicted through a negative linear correlation. The value of 0 indicates the data collected is not related. Table 2 below demonstrates the data collected from the survey is related. The relationship between EO and PV is a negative linear correlation however the p-value is greater than 0.05 thus indicating that no statistically significant relationship exists.

A positive linear relationship exists between EO and PH and EO and P, therefore, the p-value for these relationships is less than 0.05 thus indicating a statistically significant relationship. The EO and SC have a positive linear correlation however the sig value is greater than 0.05 highlighting no statistically significant relationship can be found.

The CFA was conducted to test the validity of the questions on a construct level and accordingly, the valid questions were applied for the Pearson's correlation test. The confirmation of the CFA model allowed Pivoting (P) to be used as a unidimensional construct to establish a relationship to EO. The interpretation of Pearson's correlation emphasized the relationship between EO and PH is a moderate correlation (0.40-0.69) and EO and P is a weak correlation (0.10-0.39).

**Table 2:** Pearson Correlation

<b>Construct</b>	<b>Sig 2-tailed</b>	<b>Pearson Correlation</b>	<b>Construct</b>
Entrepreneurial Orientation (EO)	0.000	0.523	Horizontal Pivoting (PH)
Entrepreneurial Orientation (EO)	0.471	-0.077	Vertical Pivoting (PV)
Entrepreneurial Orientation (EO)	0.094	0.177	Strategic Changes (SC)
Entrepreneurial Orientation (EO)	0.011	0.266	Pivoting (P)

### 5.5 Reliability

Cronbach's alpha was determined for each question relating to the EO and Pivoting. The pivoting construct was tested for first-order and second-order reliability. All sections deemed a reliability measure except Vertical Pivoting are listed in Table 3. The Cronbach's alpha for vertical pivoting was 0.499 and the investigation into individual questions led to a decrease in Cronbach alpha of 0.495 should question PV7 and PV8 be deleted in Appendix C.

The below 0.70 reliability noted for the PV is a poor measure and thus affects the reliability of the second-order construct. The EO, PH, P constructs highlighted a higher Cronbach alpha can be achieved after the deletion of E1, PH5, PV4, PV5 and PV7, however, the researcher opted to perform the CFA to identify if these deletions are deemed necessary given the Cronbach's alpha is greater than 0.70. The strategic changes reliability indicated the optimal Cronbach alpha was achieved and deletion of individual questions would decrease the reliability measure.

**Table 3:** Reliability of the first order and second-order constructs

<b>Constructs</b>	<b>Cronbach's Alpha</b>
Entrepreneurial Orientation (EO)	0.733
Horizontal Pivoting (PH)	0.737
Vertical Pivoting (PV)	0.499
Strategic Changes Pivoting (SC)	0.733
Pivoting (P)	0.820

### 5.6 Confirmatory Factor Analysis (CFA)

To determine the convergent validity at a question level and the discriminant validity

of the constructs, the researcher conducted a CFA (Covin et al., 2020). The CFA model was tested for the Chi-square value per degree of freedom (CMIN), Confirmative Fit Index (CFI), Root Mean Square Error Approximation (RMSEA) and Standardised Root Mean Square Residual (RMR). Table 4 below summarizes the results from the CFA model test. The acceptable CFA model test expects  $CMIN > 0.05$ ,  $CFI > 0.90$ ,  $RMSEA < 0.08$  and  $RMR < 0.08$ .

The pivoting construct as a second-order construct level and the EO construct met the requirements for a successful CFA. Appendix C outlines the deleted questions for each construct. The poor Cronbach alpha of PV impacted the CFA for pivoting thus requiring four of the eight questions to be deleted to achieve the resultant CFA test. The Amos models in Appendix B provide further evidence for the acceptable CFA model fit. The Amos Model supports this research study of pivoting as a unidimensional item at a construct level. The Covid-19 Impact construct contained categorical data hence no CFA can be conducted for each of the actions undertaken by the female entrepreneur during Covid-19. Each of these actions will be tested individually to determine the significance during the mediation testing.

**Table 4:** Summary of the CFA constructs

Scale	CMIN	CFI	RMSEA	RMR
Entrepreneurial Orientation	0.67	0.923	0.075	0.06
Pivoting	0.167	0.957	0.041	0.095

## 5.7 Research Hypotheses

### 5.7.1 Research Hypothesis 1

The first research question sought to understand the relationship between EO and female entrepreneurs as shown by H1.

*H1: Innovation has a positive significant relationship for EO and female entrepreneurs during Covid-19.*

The descriptive statistical information for EO is disclosed under Appendix E, Table 9. The perceptions of the female entrepreneur are ranked according to the mean.

The top five rankings relate to questions EO2, E03, E06, E04 and E09 and provide evidence of innovation affecting the female entrepreneurs' ability to adapt to the new process, procedures and routines whilst learning to conduct business in a new manner, the female entrepreneur has been open and flexible to different innovation to recognize opportunities. Female entrepreneurs are capable of complex problem solving however the fifth ranking E09 has been deleted during the CFA. The standard deviation for the top five is relatively low in value and demonstrates consistency for these questions.

The inferential statistical tests to establish a relationship between EO and female entrepreneurs are unable to be conducted due to the continuous and categorical data collected. The one-way ANOVA test was conducted to analyse the differences between more than two groups for the effect of industry, the number of years operating a business and the educational levels of the female entrepreneurs' perception towards EO. The independent T-test was appropriately selected to conduct the difference test between organisational size and EO.

Table 5 below shows the result from the Anova and T-test. The independent T-test indicates no statistically significant difference can be established between the organisation size and EO. The Anova test indicates no statistically significant difference can be found between the EO and the industry and the number of years operating in the business. Consequently, the p-value <0.05 for education levels supports a statistically significant difference between female entrepreneurs and educational levels especially for EO, PH and P.

**Table 5:** T-test and Anova test for EO and Pivoting

Test	Variable	EO Sig Value	PH Sig Value	PV Sig Value	SC Sig Value	P Sig Value	Sig level
T-Test	Organisation Size	0.173	0.250	0.917	0.877	0.719	2-tailed
Anova	Industry	0.165	0.212	0.431	0.911	0.873	0.05
Anova	Number of years	0.547	0.370	0.891	0.798	0.796	0.05

	operating a business						
Anova	Education Level	0.010	0.010	0.348	0.191	0.039	0.05

Table 6 below, provides the breakdown of the educational levels that have a difference between the groups and EO. The level of degree and postgraduate qualifications highlight a difference in the female entrepreneurs' perception of EO with an average difference of 0.47 and 0.56 respectively. The average difference relates to a positive influence on EO however the alternative hypothesis H1 is unable to be proven through this research.

**Table 6:** Post Hoc Tukey Test for Education Level

Multiple Comparisons							
Tukey HSD							
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Entrepreneurial Orientation	Master	Secondary Education (High School)	0.23438	0.18826	0.601	-0.2629	0.7316
		Degree	.47585*	0.17950	0.049	0.0017	0.9500
		Postgraduate	.56497*	0.18324	0.016	0.0810	1.0490
Pivoting	Secondary Education (High School)	Degree	0.16212	0.16108	0.746	-0.2633	0.5876
		Postgraduate	.47982*	0.16635	0.027	0.0405	0.9192
		Master	0.26667	0.21228	0.594	-0.2940	0.8274
Horizontal Pivoting	Secondary Education (High School)	Degree	0.33665	0.20584	0.367	-0.2070	0.8803
		Postgraduate	.70148*	0.21257	0.009	0.1400	1.2629
		Master	0.07813	0.27127	0.992	-0.6384	0.7946

### 5.7.2 Research Hypothesis 2

The second research hypothesis sought to investigate the relationship between the constructs EO and PH and provide evidence for the alternative hypothesis H2 to be valid.

*H2: EO Innovation is positively significant when adopting horizontal diversification for pivoting.*

The descriptive statistics are outlined in Appendix E, Table 9. The highest-ranked mean results demonstrated the female entrepreneurs' action to change the business

model based on the needs of the environment. The deletion of the PH3 question conducted during the CFA analysis provided evidence of the female entrepreneur entering new markets to seek new opportunities as a significant mean contribution with 63 respondents leaning towards agree and strongly agree on perceptions, however, this is not a significant factor in determining the relationship between EO and PH.

The inferential statistical test conducted was the Pearson Correlation discussed in Table 2. The results yielded a positive relationship between EO and PH which is represented by a Pearson's correlation of 0.523 at a  $p=0.00$ . The null hypothesis is rejected in favor of the alternative hypothesis H2. The confirmation of a moderate relationship is found between EO and PH valid at a 1% significance level. The level of education in Table 6, shows a statically significant difference between Postgraduate level and Secondary Education.

### **5.7.3 Research Hypothesis 3**

The third research hypothesis sought to determine if there was a relationship between EO and PV and was assessed through H3.

*H3: EO Innovation is positively significant for perseverance through vertical diversification.*

The descriptive statistics are outlined in Appendix E, Table 9. In particular importance for this research study, the top five highest ranked means have been removed from the construct during the CFA model. The first ranked mean (PV4) was included in the PV construct that was used to establish a relationship between EO and PV.

The Pearson correlation was conducted to investigate the relationship between EO and PV, thus disclosed in Table 2. A negative linear correlation existed because of the Pearson correlation of -0.077 at a  $p =0.471$ . The p-value is greater than 0.05 hence indicating that no statistically significant relationship exists and accepts the null hypothesis and rejects H3.

#### **5.7.4 Research Hypothesis 4**

Research hypothesis 4 aimed to investigate if a relationship exists between EO and SC. This relationship is described in H4.

*H4: EO Innovation is positively significant for pivoting through strategic changes.*

Appendix E, Table 9 elaborates on the descriptive statistics. Through the CFA model, the construct for SC was adjusted and in doing so, the highest-ranked means were removed. In brief, the adjusted ranking accounts for SC10 which describes the time to make a decision was short and required fast action as an important factor in determining the relationship between EO and SC. The relationship was tested through the Pearson correlation and yielded a  $p=0.094$  with the corresponding Pearson Correlation at 0.177. Although a positive relationship can be found, the  $p=0.094$  supported the assessment that no statistically significant relationship can be found between EO and SC. The confirmation of this non-relationship, therefore, rejects H4 and accepts the null hypothesis.

#### **5.7.5 Research Hypothesis 5**

The fifth research hypothesis sought to investigate the relationship between EO and Pivoting. The CFA model confirmed the unidimensional construct of P through the integration of PH, PV and SC. The assessment for the relationship is described in H5.

*H5: EO Innovation is positively significant for pivoting models in female entrepreneurs.*

The integrated construct for P is disclosed in Appendix E, Table 9. The ranked mean analysis highlights the top four questions that influence the relationship between EO and P indicated by PH6, SC10, PH4 and PV4. The female entrepreneurs' perception towards changing business models, the decision-making time being short, adjusted offering based on customer feedback and the reliance on marketing for business continuation contributed towards strongly agree and agree on responses.

The relationship between EO and P was tested using Pearson's correlation which yielded a co-efficient of 0.266 at a  $p = 0.011$ . The test explained the positive relationship between both constructs however the p-value showed there existed a weak correlation between EO and P.

#### **5.7.6 Research Hypothesis 6**

The last research hypothesis sought to investigate the mediating role of the Covid-19 Impact on female entrepreneurs.

*H6: EO is significantly mediated by the Covid-19 impact to influence the relationship of P.*

The data outlined in Appendix E, Table 9 highlights the frequencies of the Covid-19 impact construct depicted by CV. The data collected was categorical and therefore failed the CFA and EFA model. The categorical data were collected using multiple response questions instead of the Likert scale which lead to the statistical data failure. The role of mediation was tested individually assessing if each of the CV1- CV8 questions undertaken by the female entrepreneur had a significant influence between EO and P. The results of mediation failed for each CV1- CV8 item due to no statistical test that could be conducted to obtain accurate results. The failure of the test accepts the null hypothesis instead of H6.

The researcher aimed to test the direct relationship between EO, and P included in the mediation testing through simple linear regression. The results depicted in Appendix F, Table 10 highlight the statically significant p-value of 0.011 at an R square co-efficient of 0.071 and Pearson Correlation at 0.266 for Model 1. Model 1 uses the independent variable as EO and the dependent variable as P. The Pearson correlation indicates a weak positive relationship exists between the variables whilst the p-value at 0.011 shows a significant relationship exists. The importance of the R square value at 0.71 highlighted the strength of the relationship as a strong association since this value is closer to +1.

Since the mediation effects failed due to limitations in the data collected, the

researcher aimed to investigate if a moderation effect can be explained for Model 1. The moderation results included in Appendix F, Table 11, explain the interaction of each CV1- CV8 item with EO and generated p-values greater than 0.05, thus the test for moderation failed for Model 1.

The researcher continued to establish if a moderation effect can be explained through the generation of Model 2 which classified EO as the dependent variable and P as the independent variable. The simple linear regression noted in Appendix F, Table 10 provides the results for Model 2. The regression model results yielded the same results as evident in Model 1. A strong association, therefore, existed between EO and P irrespective of the change in the dependent and independent variable status. The results for the moderation effects for each of the CV1- CV8 are included in Table 11, thus highlighting two actions undertaken by the female entrepreneur to be successful.

The action of closing business temporarily and terminating business leases were the actions that generated an interaction p-value  $<0.05$  and concluded a significant moderation effect exists between P and CV2 and CV6 to influence the relationship on EO. Pivoting construct is unable to predicate the CV2 and CV6 effects based on the moderator model. The relationship between P and EO is contingent on CV2 and CV6 and both interactions are positive. Comparing CV2 interaction p-value of 0.0258 and CV6 interaction p-value of 0.044, the assumption was based on the p-values that are closer to 0.05 is a weaker moderator effect. The CV6 of 0.0444 is closer to 0.05 and demonstrates the lower strength on the relationship between P and EO compared to CV2 p-value = 0.0258.

The Hayes Process Model technique was conducted for the moderator analysis. The conditional effects for CV2 and CV6 as moderator is displayed in Table 7 below. The conditional effect considers at each value of the moderator, the effect of the independent (P) variable on the dependent (EO) variable change. The analysis of the result shows the conditional effect size of the moderator increases with the increase in standard deviation. The larger effect size of both moderators yields a p-value  $<0.05$  which demonstrates a significant interaction of the moderator compared

to the smaller effect size.

The unconditional interaction listed in Table 7 below provides an important parameter, the R square change of the moderators and variance from the main effect which was noted in Table 7. The simple linear regression in Appendix F, Table10, showed the R square change for the main effect to be 0.071 whilst the results in Table 7 show the effect of the interaction of CV2 and CV6 on the main effect. The analysis of CV2 with an R square of 0.0517 shows a moderate association exists between P and EO. Contrasting with the CV6 R square of 0.0423 that shows a weak association between P and EO.

**Table 7:** Conditional and Unconditional Effects of Moderator CV2 and CV6

Test for highest order unconditional interaction							
	R square- change	F	df1	df2	p		
CV2.Closed business temporarily	0.0517	5.1445	1.00000	87.00000	0.0258		
CV6.Terminated building lease	0.0423	4.1592	1.00000	87.00000	0.0444		
Conditional effects of the focal predictor at values of moderator							
Covid Impact	Standard Deviation	Effect	se	t	p	LLCI	ULCI
	0.000	0.0734	0.1256	0.5845	0.5604	-0.1763	0.3232
CV2.Closed business temporarily	1.0000	0.5144	0.1484	3.4671	0.008	0.2195	0.8093
	0.000	0.1743	0.1039	1.6784	0.0969	-0.0321	0.3808
CV6.Terminated building lease	1.0000	0.7669	0.2713	2.8263	0.0058	0.2276	1.3062

According to the moderator results, the researcher discovered a significant finding *F1: Pivoting is significantly moderated by Covid-19 Impact to influence the relationship of EO.*

The discussion towards the significant finding was generated from the data collected and the researcher would consider the moderator effects for the development of a business sustainability model.

## 5.8 Insights from Female Entrepreneurs Responding to the Survey

### 5.8.1 Telephonic conversation

The researcher was contacted by a female entrepreneur that responded to the survey and was able to pivot the business by 300% during Covid-19. The respondent operates in the education industry providing financial literacy to children, SMEs and

business coaching and is involved in new programs with SEDTA. The income stream was generated online and the business model incorporated was aimed at empowering women through a passive income model system. The key points noted by the female entrepreneur as vital for pivoting relates to the assumption that everyone that pivots will be successful and pivoting into a new environment requires a new skill set.

The respondent originally operated in the beauty industry and transcended into education during her business operations. The ability to pivot online was an easy task because the digital knowledge was already obtained and was combined with the marketing business knowledge gained from work experience. Success to a new environment involves an intense level of research and the respondent spent the first three months of the Covid-19 lockdown researching potential suppliers to find the optimal business solution.

The impact of Covid-19 on female entrepreneurs was felt hard due to family responsibilities and the protection of the business from failing. The resilience of the respondent enables the rapid adaptability to the changing environment after accepting change was required. The importance of networks was emphasized by the respondent because, through these networks, the business transition was made easier, especially for marketing product strategies. The respondent discussed the importance of failure in business to understand what is not yet known by you and through this learning, business success can be achieved. The infrastructure for the business was in existence pre-covid, however, through Covid-19, the business models were altered to achieve a 300% pivoting capability. The insight gained about pricing demonstrates the negotiation of price adjustment should not be easily entered into because the respondent advises female entrepreneurs to value their product and service over the monetary aspect.

### **5.8.2 Results Gained from the Open Comment Section of the Survey**

The detailed feedback is included in Appendix D, Table 8. The evidence from the feedback supported the female entrepreneurs' need to adapt and learn for business survival. The resilience of female entrepreneurs is demonstrated in the continuous

navigation during Covid-19 instead of closing the business permanently. The change of an online business was essential for survival and the adjustment of products and services were needed to meet the demands on the environment. Business reflection is vital for business success to understand the course of action taken during the pandemic and the effect of these actions on future business is vital for continued business sustainability.

The creation of new markets was seized for the opportunities due to the travel restriction imposed by the government, consumers required quick access to products especially in the rural areas of South Africa. The female entrepreneurs' level of risk is influenced by business instinct and through the interaction of like-minded people in business networks. The business model adjusted is a significant event that is noted when the adjustments were done pre-covid. This allowed the female entrepreneur the ability to focus on gaining business knowledge during Covid that enabled the survive and thrive effect for business.

## Chapter 6: Discussion of Results

### 6.1 Introduction

This research study was designed to investigate the relationship between the EO and the independent variables of P and CV as defined in the model outlined in this chapter. The proposed model outlined in chapter three had been revised to consider the new findings from the data collected. The new findings are relevant for the discussion since the findings are not significant to change the overall scope of the research study. The adjustments from the proposed literature model and the post-data analysis model are the changes of the dependent variable (P) in chapter three to an independent variable in chapter six. Consequently, the EO variable changed from independent to a dependent variable and the mediator changed to a moderator after the analysis of the results.

The influencing behaviour of the moderator variable and their impact on the P – EO relationship were tested. The objectives of the research study were to assess the business sustainability of female entrepreneurs during Covid-19, therefore, all assumptions were tested to validate the extant literature. The assumption is tested in research question one to gain insight into the significant influence of EO and female entrepreneurs in South Africa as proven through the literature conducted by Chatterjee et al.,(2020).

The second research question tested the various descriptions of pivoting found in literature and established a relationship between each of these methods of pivoting to EO. The researcher prompted by the results of the data considered a unidimensional construct of pivoting for further interrogation of the P – EO relationship.

The third research question sought to understand how the characteristics of pivoting and the influence of the moderator effect can enhance or alter the impact on EO. In doing so, this research study expanded on the effect Covid -19 had on female entrepreneurs and gained insight into the success drivers needed to navigate through the uncertain times.

## 6.2 Research Question 1

*R1:* Aims to establish a relationship between EO (Innovativeness) in female entrepreneurs.

The relationship between EO and female entrepreneurs in South Africa within a pandemic context was the proposed outcome for research question 1. The relationship is incapable of being tested through statistical methods to establish a relationship to support H1 due to the limitation of the type of data required to perform the test. The relationship was investigated through the perception of the female entrepreneurs listed in Appendix E ,Table 9. The assumption for this relationship stems from the literature conducted with female entrepreneurs in India and since the sample collected for this research study contained only female entrepreneurs, research question 1 can be applied. The age dispersion of the female entrepreneurs is not significant because the respondents are mostly made up of middle-aged women (Chatterjee et al., 2020). The sample consist of 74.8% of female entrepreneurs between the ages of 30-49 disclosed in Figure 4.

As a result of the overall outcome from the results obtained for the relationship between EO and P, it was noted as significant, therefore, the researcher inferred the significant relationship between EO and female entrepreneurs in South Africa. The inference is applied to the context of the pandemic which provides no difference in the significant relationship of EO and female entrepreneurs compared to the literature conducted during a natural disaster or turbulent hostile environments (Giones et al., 2020; McCarthy et al., 2018).

The differentiation of female entrepreneurs' responses constituting a rational human action compared to impulsive reactions is challenging during the context of the pandemic. The Covid-19 crisis resembles the entrepreneurial behavior exhibited during a natural disaster. In this manner, the productive and unproductive actions undertaken by the female entrepreneur occur irrespective of the challenges faced in obtaining and processing information for factors that would have generated a rational and organised response (Giones et al., 2020).

Drawing from the theory of Theory of Planned Behavior, the perceived behavioural control exhibited by the female entrepreneur associates the individual perception of performing a behaviour as an easy or difficult task whilst predicting the female entrepreneurs' behaviour directly. The importance of this concept for the investigation into research question 1 demonstrates the perceptions outlined in Appendix E, Table 9, which can provide evidence of the female entrepreneurs' control over the performance of their behaviour (Nikou et al., 2019). The applicability to the Likert scale of strongly agree was interpreted as an easy behaviour and accordingly, the strongly disagree scale represented a difficult behaviour.

Further understanding into the female entrepreneurs' responses to each of the EO1-EO8 survey questions, the concept of affect was applicable in determining the cognition and behavior taken during the pandemic. The role of affect has been established in Bernoster et al., (2020) study demonstrating the applicability of affect through innovation and the capacity to respond effectively to changes in dynamic environments. The association of affect has been extended to a level of effort exerted, personal persistence, the commitment to underperforming projects, creativity, attitudes, openness to experience, agreeability and conscientiousness experienced by the female entrepreneurs. The relevance for this research study indicated the positive affect is positively associated with the attitude and innovativeness in SMEs and is positively associated with EO whilst the inverse applies to negative affects.

The EO imposed by a female entrepreneur leads to a deliberate action to start a business and is instrumental in reducing the rate of business failure. On top of this, the EO dimension of innovation is a significant contributor to the relationship of a positive affect generating a positive EO. The researcher applied the affect principle to the Likert scale and outlined the strongly agree to resemble a positive emotion that constitutes a positive affect. The negative affect is demonstrated through the responses of strongly disagree (Bernoster et al., 2020).

The descriptive statistics per EO question contained in Appendix E, Table 9 supported the discussion of the use of the Likert scale for affect and perceived

behavioural control of the female entrepreneurs that responded to the survey. The overall mean for the EO construct is 4.040 which highlighted the disposition towards an agree scale thereby illustrating the positive influence of innovation on EO and the population of female entrepreneurs within South Africa.

The comparison of individual questions in respect to the combined mean of strongly agree and agree was experienced for the top five questions out of the eight questions that formed the EO construct described in Appendix E, Table 9. Relating to recent research, the strategic posture of EO was subjective to changes in the market, products, competitors and business core competencies thus changing the strategic posture of an organisation was influenced by the female entrepreneurs' affect traits which constitutes part of the female entrepreneurs' characteristics that are of a long-term nature. The inverse direction of this relationship was considered less conceivable according to Bernoster et al., (2020). In summary, the female entrepreneurs' responses to the survey generated positive perceptions in terms of the influence of affect and perceived behavioural control, therefore, establishing a relationship between EO and female entrepreneurs in South Africa.

The analysis of the industries in Figure 6 confirmed the transition of female entrepreneurs into industries that require innovation for operation. The data collected authenticated the expansion into the technology industry, particularly into the FinTech and technology Incubator sectors. These new areas of interest firstly promote the female entrepreneurs' role to provide innovative resources through the incubator facilities to promote entrepreneurship and growth.

Secondly, the Fintech industry is a new market that is rapidly changing and relies on innovation to be at the forefront in addressing the customer need. On the contrary to the data exhibited in Figure 6, recent studies showed the influence of social factors and cultural values can result in the tendency of female entrepreneurs to elect to operate in stereotypical industries due to the level of perceived skill. In addition to this, the female entrepreneurs decide to enter an industry based on personal characteristics which fit the potential industry hence experiencing barriers of difficulty in venturing into new industries.

The contradiction to theory perceived the female entrepreneur based on the enhanced level of failure with the transition into the innovation industry greatly affected (Nikou et al., 2019). Although the contribution for this sample was predominately aligned to stereotypical industries, there was potential for the female entrepreneur to transgress from the theory into new industries. In essence, the Anova test conducted in Table 5 confirmed there was no statistically significant difference between the various industries and the EO construct thereby implying the female entrepreneur operating in South Africa is inclined towards EO and innovation irrespective of the choice of industry.

The level of education is an essential factor to consider in understanding the relationship between EO and female entrepreneurs in South Africa. The results of the Anova test confirmed a statistically significant difference was found between the various levels of education and EO as indicated in Table 5 and Table 6.

The majority of the sample of female entrepreneurs was made up of 82.5% that have an education qualification after the completion of secondary education indicated in Figure 10. A significant difference in the level of education was found between the Degree and Post Graduate qualification levels compared to female entrepreneurs that have Master's qualifications outlined in Table 6. The higher the level of qualification, the greater the effect of significance was found on the p-values. The outcome from this insight showed there is no statistically significant difference in female entrepreneurs who have a secondary education compared to the various educational levels.

According to Santos, Marques and Ferreira, (2018), the importance of entrepreneurial education allows the female entrepreneur to develop the attitude needed for business and develop entrepreneurial skills, thus the level of education proliferates the impact on EO and innovation can predict the level of training in female entrepreneurs. Through the studies conducted by Nikou et al., (2019), the prior exposure to an entrepreneurial education has a positive effect on the perceived behavioural control exhibited by the female entrepreneur.

The following argument favors the lack of formal education and the role of the family which serves as a training ground for the female entrepreneur. Through this role, the female entrepreneur learns skills to interact with clients, planning skills and motivational techniques that are learned from business experience. These entrepreneurial skills are reliant on a personal capacity and however, in the absence of education, these skills can be developed from business experience and practice. It is apparent through literature that entrepreneurial skills can strengthen EO for innovation through the development of skills and abilities such as leadership, communication, innovation, creativity, problem-solving and networking (Santos et al., 2018).

In brief, the relationship between EO and female entrepreneurs can be established based on the statistical test confirming the significance between EO and female entrepreneurs and inference can be established around the theory that innovation predicts levels of training in female entrepreneurs. Deriving from this pathway that entrepreneurial skills strengthen EO and account for the sample of female entrepreneurs that have a secondary education level are therefore able to further establish the relationship between EO and female entrepreneurs in South Africa.

The number of years operating a business is outlined in Figure 9, consisting of 49.5% of the sample size representing early entrepreneurs who have operated a business for less than 5 years. Formulating from the Anova test in Table 6, no statistically significant difference was evident between the years of operating a business. The supporting literature that associated a positive affect with a positive EO, particularly innovation as a significant contributor to reducing business failure and starting a business (Bernoster et al., 2020).

The 49.5% accounted for in the sample represented the female entrepreneurs making deliberate actions to start a business during the last 5 years. The particular importance of the largest category of 0-3 years comprising of 31.9% who have started a business pre-covid and have chartered the waters of the pandemic show positive affects of a mean of 4.139 and a standard deviation of 0.43730 thereby

supporting the theory in favor of EO.

In conclusion, through the perceptions of the female entrepreneur, EO can be established to exist in female entrepreneurs irrespective of findings by Santos, Marques and Ferreira, (2018) that female entrepreneurs orientate to low innovation levels.

### **6.3 Research Question 2**

R2: Aims to establish a relationship between EO (Innovativeness) and the Pivoting models in female entrepreneurs.

Research question 2 consisted of four hypotheses (H2-H5) that were tested to understand the relationship between EO and Pivoting.

#### **6.3.2 Hypothesis 2**

The first hypothesis aimed to determine the significant relationship between EO and PH. The statistical results outlined in chapter five highlighted a positive significant relationship between EO and PH. The Pearson correlation of 0.523 yielded a p-value of 0.000 in Table 2 demonstrating a moderate correlation relationship. The PH construct reflected a mean value of 3.67 and a standard deviation of 0.672 thus representing a neutral position by the female entrepreneur concerning the implementation of a horizontal diversification pivoting method.

The descriptive statistics contained in Appendix E Table 9, underlines the top question from the survey relating to horizontal diversification as *PH6. I have changed the business model to adapt to the needs of the environment* with a mean value of 3.92 and a standard deviation of 0.885. The translation of a mean value of 3.92 refers to a neutral Likert scale which represents the hesitation of the female entrepreneur to make changes to the business models.

As explained by Krammer (2021), female entrepreneurs tend to adopt a wait-and-see approach before undertaking strategic commitments. Female entrepreneurs are

considered to be risk-averse thus promoting the adoption of a long-term approach. The actions implemented lean towards building organisational resilience for the long-term benefit instead of focusing on the short-term unplanned solutions required for survival during the pandemic. The impact from a long-term force is the reason for female entrepreneurs displaying behaviours that are less likely to result in quickly adapting the business models and making operational changes (Krammer, 2021).

Although this literature is consistent with the mean score achieved, the descriptive statistics outlined in Appendix E Table 9 contradicted the mean score of a “neutral” with 71 respondents falling into the strongly agree and agree on category. This reflects that female entrepreneurs do consider the short-term approach of changing business models, especially during the conditions of the pandemic.

Business model innovations are described in the literature to generate greater returns than product or process innovation. The reward for implementing a frequent business model innovation causes an improvement in the resilience of the organisation from the changes seen in the environment and thus provides a sustainable competitive advantage. The multifaceted roles of business model innovation guide the organisation to change the entire business or specific individual aspects. This permits a response to either an opportunity presented or resolve challenges faced by the organisation, therefore, has the mechanism to facilitate diversification and innovation. The challenge in adopting a horizontal diversification business model relates to the alignment of all business model elements to achieve an optimal situation for the exploitation of opportunities to gain a competitive advantage (Geissdoerfer et al., 2018).

The analysis of the question from the survey *PH1. I have achieved sustainability through the continuous innovation of new ideas and product development* is ranked third compared to the means value. This question has a mean value of 3.67 and a standard deviation of 1.001 thereby supporting the notion of greater returns are achieved through business model innovation compared to product innovation. Consequently, the horizontal diversification strategy was linked closely to product innovation for a competitive advantage. According to the work of Linton and Kask

(2017), the incorporation of horizontal diversification into a business will result in a positive association of innovation in EO.

The horizontal pivot was based on negative feedback received from a customer about an existing product or service offering which results in a new product or service offered in replacement. A fundamental contribution to horizontal diversification is the ability to replace and terminate a product or service offering viewed in prior literature as a differentiator principle (Wood et al., 2019). The horizontal diversification model for pivoting is associated with a deliberately planned business model innovation where the potential innovation projects are complex thus noticed in the development of new products or services (Geissdoerfer et al., 2018).

The application of the adjustment of a product based on customer feedback for the generation of a new product or service is evident in the second and fourth-ranked questions from the survey listed below: *PH4. I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback. PH2. I have created a new product or service offering as a replacement for existing offerings.* These questions support the literature provided whilst explaining the main driver for horizontal diversification pivoting can be analysed through a change in business model.

According to Kirtley (2020), entrepreneurs orientated towards innovation may affect the inclination for a business model based on business expertise. The Anova test conducted in Table 5, indicated no significant difference was evident between the number of years the female entrepreneur was operating compared to PH. In addition to this, the inspection of the descriptive statistics in Appendix E Table 9 based on the two highest mean values provided evidence leaning towards female entrepreneurs operating a business longer than 10 years obtained a mean value of 3.8409 whilst the female entrepreneur operating between 0-3 years showed a mean value of 3.7241.

These findings agreed with the literature supporting early-stage entrepreneurs undergoing the creation of a new business model given the recent establishment of

the business therefore, there is no business model that has been formulated. Although business model innovation has a high level of failure because the initial investment in transaction cost is high, the early-stage entrepreneur can benefit from incremental innovation when deciding the appropriate business model. The established entrepreneur adjusts the current business model through business model transformation and business model diversification. The significant difference in the options available to the established entrepreneur relates to the business model transformation occurring by the existing business model being changed to a new business model. The complexity of the business model diversification occurs when the female entrepreneur adds a new business model to the currently existing business model that is operational (Geissdoerfer et al., 2018).

The findings from this research study are limited in providing evidence in concluding if the female entrepreneur conducted either a business model transformation or business model diversification business. The challenge explained by Geissdoerfer, Vladimirova and Evans (2018) in adopting a business model diversification strategy arises from firstly, failing to identify the suitable business model to use for new technological issues and secondly, from the conflicts experienced between the current and the new business model. This challenge was presented in the moderate correlation relationship between EO and PH by emphasizing the choice of business model affects the innovation levels in the female entrepreneur thus impacting on EO.

The EO construct favors the acceptance of innovation by female entrepreneurs through a mean value of 4.040 and a standard deviation of 0.475 disclosed in Appendix E Table 9. Through *EO6, I am open and flexible to different innovation that allows opportunities to be recognized and EO4, I always explore new and creative solutions that I am unfamiliar with during problem-solving*, highlighting the innovation orientation of female entrepreneurs in South Africa.

The combination of EO and PH was further supported in literature through the superior adoption of incremental innovation to continuously change products, services and processes required to address the changing needs and wants of customers due to Covid-19 as a driver for EO (Li et al., 2021). These questions

demonstrated a disruptive innovation. *EO8, during the pandemic, I was continually seeking new markets to enter and PH3. I have entered into new markets to seek new opportunities that have been deleted during the CFA model.* As explained by Li et al., (2021) disruptive innovation enabled entrepreneurs to venture into new markets through opportune methods of providing customer satisfaction and influencing the mindset of the consumers.

In conclusion, the significant relationship between EO and PH stems from incremental innovation and business model adjustments.

### **6.3.3 Hypothesis 3**

This hypothesis aimed to establish whether a significant relationship between EO and PV is present and therefore apply the theoretical framework outlined in Figure 1 to the perseverance model. The Pearson correlation test conducted in Table 2 demonstrated no significant relationship exists between EO and PV based on  $p=0.471$  and the correlation coefficient of  $-0.077$ . The significance of the negative correlation indicated the constructs are inversely related thereby a female entrepreneur EO will be enhanced by reduced levels of PV.

The argument is further supported through literature explaining the vertical diversification strategy aligns to a process innovation that will notice the reduction in R&D cost because customers are price-sensitive and demand less novelty and product design. Through Linton and Kask (2017) studies, the vertical diversification strategy was proven to not include innovativeness because this growth strategy is concerned with cost efficiencies and standardisation of process thereby reducing the organisations' flexibility. The importance of the Covin and Selvin (1989) scale attests to process innovation not being part of the main innovative feature of EO and as result, the expected outcome is a negative association of EO with a vertical diversification strategy (Linton & Kask, 2017).

The theoretical model described in Figure 1 validates the approach of considering EO using innovation to change routines, processes and procedures for the

application of a perseverance model. The descriptive statistics outlined in Appendix E Table 9, confirm the theoretical model through the inspection of *EO2: I have learned during the pandemic to quickly adapt to new routines, processes, procedures* achieving the highest mean value for the EO construct, thus reflecting a mean value =4.43 and a standard deviation =0.791. The comparison of the highest mean value in the PV construct relates to *PV4: I have relied on the marketing of the existing product or service to allow business continuation*. The corresponding mean value of PV4 is 3.68 and a standard deviation of 1.053. The analysis conducted for these questions guide the outcome of an 'agree' response for EO whilst achieving a neutral response for PV4 and accordingly, this created the formation of a potential relationship between EO and PV. In addition, based on the work performed by Wood et al.,(2019), vertical diversification occurs due to an alteration of an existing product or service offering to maintain market positioning whilst focusing on competitors' movements.

The factors appealing for female entrepreneurs to apply vertical integration are not influenced by the size and age of the firm, the level of experience of the entrepreneur, however, is positively significant depending on the number of start-ups (McCarthy et al., 2018). This is evident in Table 5 though no significant difference can be found between organisation size and the number of years in business. Appendix E Table 9, shows the means values between 0-1 businesses held = 3.0450 and 2-5 businesses held = 3.0641, thus contradicting the theory outlined by McCarty et al., (2018).

Through academic literature, the narrative of female entrepreneurs tending towards the diminished adoption of information technology has been challenged during the pandemic with female entrepreneurs engaging with customers online through vertical integration and adapting their products, amending a pricing model from a subscription model to a la carte model and optimizing a website design for customer satisfaction. The pandemic has demonstrated the resourcefulness of female entrepreneurs in amending product offering to address the social needs created by the pandemic (Manolova et al., 2020). The data collected and through the CFA model opposed the above theory through the deletion of *PV1: I have made changes to the*

*firms' value chain through the engagement of external stakeholders, PV2: I have adjusted the firm's product for retail through an online platform, PV3: I have adjusted the price modeling because of the pandemic* which provided evidence these factors are not associated with preserving.

The last factor from the PV constructs *PV5: I have a strong passion for the product or service and through this passion, I choose to not have new products or services* has a mean value of 2.85 “Disagree” and a standard deviation of 1.276 translates to the need for new products and services during the pandemic. The argument for preserving during the pandemic is possible when the female entrepreneur chooses to not comprise the original idea and product of the business through the strong passion and motivation assigned as fundamental reasons for starting the entrepreneurial path.

The notion of pivoting away from one's passion to represent re-branding or adjustment to the offerings is acceptable however when the pivot is significant to divert from the passion of the female entrepreneur, then pivoting is seen to undermine passion and affect the long-term success (McMullen, 2017). The application of the literature by McMullen (2017) and the data collected indicated pivoting away from passion was required for the female entrepreneur to achieve short-term success, however, the consequence for long-term effects can be determined post-pandemic.

In conclusion, the PV and EO are not significant factors for determining business sustainability during uncertain times.

#### **6.3.4 Hypothesis 4**

Hypothesis 4 was aimed at investigating a significant relationship between EO and SC as the means for a pivoting model. The Pearson test outlined in Table 2 explained no statistically significant relationship existed between EO and SC through a p-value of 0.094 and correlation coefficient of 0.177.

The question from the survey *SC10: I have experienced during the pandemic, the time I have to make decisions was short and I had to act fast* displayed the highest mean of 3.87 and standard deviation of 0.98 hence, aligning to a “Neutral response”.

The crucial element for female entrepreneurs to survive the pandemic required a strategic change that allows the organisation to adapt to environmental changes through redefining the organisation's mission, altering the priorities and envisioning new goals to achieve the change in direction of the organisation. The additional benefit of strategic changes is the ability to provide the female entrepreneur with the foresight to anticipate and induce changes essential for survival (Cholula, 2021).

The uncertainty of the pandemic caused the business situations to continuously change hence business planning helps the female entrepreneur to monitor the changes continuously and reassess the viability of the option given the change in the current situation.

The in-crisis phase outlined by Giones (2020) highlighted the female entrepreneurs' adjustment of the business planning activities concur with the diminished level of formality associated with business plans due to the response time for action being reduced. The downside to business planning is the amount of time and resources required by the female entrepreneur. The context of the pandemic is fast-acting and requires the female entrepreneurs to invest time and resources into activities that generate the rapid product development for new products, finalizing and concluding customer contracts for future and current sales. (Giones et al., 2020).

The second-ranked question is in Appendix C Table *SC6: I considered options that provided only reduced risk levels* have a mean value of 3.04 and standard deviation of 1.043. The literature explained the neutral response through the shift in declining risky options during stable conditions forces a mindset change to consider previous risky options as viable in dynamic environments. (McCarthy et al., 2018). The female entrepreneurs' response to a crisis is pursuing reduced risk options whilst male entrepreneurs seize opportunity options (Manolova et al., 2020).

The above questions SC10 and SC6 provide a reasonable understanding of the female entrepreneurs' ability to decide on a viable option. *SC4: I found it hard to decide on which strategic change was the most viable option to act upon* ranked fifth in terms of mean values of 2.76 and standard deviation of 1.205, which is highlighted through the 45 female respondents that selected the strongly disagree and disagree option in Appendix E Table 9.

This translation from theory is important to understand the early-stage female entrepreneur during the extremely uncertain conditions imposed by the pandemic as the female entrepreneur is unlikely to decide on an optimal business idea to take due to the vast amount of relevant information missing and the exhaustive amount of time and effort involved in obtaining this information. The severe impact of failing to get the idea right can have drastic consequences for the long-run survival of the organisation (Leatherbee, 2020). The evidence from the data collected in Appendix E Table 9 shows the number of years in business compared to SC produced results showing the highest number of female respondents of 29 under the 0-3 year category had a mean value of 2.9360 thus opposing the literature on early-stage female entrepreneurs.

The observation of the EO constructs *EO10: I have been experimenting with decision options and adjusting the plan through learning* ranked fifth in Appendix E Table 9, which has a mean of 4.02 "Agree" and a standard deviation of 0.73. This is considered relevant to the strategic changes as a pivot model because the type of business planning for business survival is required to be frequent and agile to support the female entrepreneur to navigate through the uncertainty of the pandemic (Giones et al., 2020).

The process of iterative experimentation within an environment permits the course of action yielding learning in addition to gleaning sufficient information about each alternative. Having said that, the experimentation of alternatives is portrayed as a partial commitment by the female entrepreneur in favoring one alternative over an equally viable alternative. EO paves the road for the discovery of alternative strategies however the paradox of entrepreneurship is experienced (Gans et al.,

2019).

Young entrepreneurs are cognitively flexible with their management activities, structure, and routines due to limited business operating expertise thus leading to an iterative innovation process developed through experimentation (Kirtley, 2020). Through the rule outline by Gans, (2019) of “Test Two, Choose One” (p.745) where the female entrepreneur makes use of learning about the alternatives to inform the direction of the search process, then promoted by a positive feedback response the search is continuing until the limitation of learning is achieved.

In conclusion, the above explains the ability of EO to affect the SC of the female entrepreneur however the relationship between the contrast is not significant.

### **6.3.5 Hypothesis 5**

The fifth hypothesis was the main hypothesis for determining whether a significant relationship exists between EO and P.

Through the CFA model, the P construct was proven to represent a unidimensional construct for pivoting by incorporating PH, PV and SC into the construct. The fifth hypothesis, therefore, investigated the relationship between EO and P by considering the main drivers from each pivoting model. The Pearson correlation test described in Table 2 indicated a positively significant relationship existed between EO and P by the p of 0.011 and a correlation coefficient of 0.266. The correlation is therefore considered to be a weak correlation however the relationship is positive.

The P construct outlined in Appendix E, Table 9 indicates *PH6: I have changed the business model to adapt to the needs of the environment, SC10: I have experienced during the pandemic, the time I have to make decisions was short and I had to act fast, PH4: I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback* as the first three top questions that form the construct. These have been discussed in detail through the analyses of the PV and SC hypotheses.

When comparing the top three questions that form the EO construct in Appendix E, Table 9, *EO2: I have learned during the pandemic to quickly adapt to new routines, processes, procedures*, *EO3: I have learned during the pandemic to quickly adapt to a different way of working*, *EO6: I am open and flexible to different innovation that allows opportunities to be recognized*, highlighting the factors of a female entrepreneurs' EO that influence the method of pivoting adopted.

While EO provides the strategic posture for the organisation when dealing with changing markets and competition, the female entrepreneur benefits from the investment in innovation to overcome these factors. The adoption of a vertical or horizontal diversification strategy is essentially the growth strategy that will assist the female entrepreneur to adjust to market changes and maintain a competitive advantage. These growth strategies can meet the demands of the customer through the design of the product, the level of quality and offer the customer the benefits of speed and flexibility (Linton & Kask, 2017). The practical application of this theory encourages female entrepreneurs to match the growth strategies needed to gain a competitive advantage with their EO alignment (Linton & Kask, 2017). Hence PH is more favored than PV and SC.

Based on a study conducted by Alejandra et al.,(2021), a pivoting framework had been established. The significance for this research study aligns to the pivot mechanism as a strategic decision and as a correction or replacement in case of failure will be assessed to determine the impact Covid-19 had on the female entrepreneur's decisions. The consequence of both mechanisms related to a change in the original business model which no longer yields the expected results, thus, are either replaced, changed or transformed to ensure survival when resources are considered limited (Alejandra et al., 2021). This further supports the result depicting *PH6: I have changed the business model to adapt to the needs of the environment* as the main driver for pivoting.

The female entrepreneur according to Neumeyer & Santos (2018), has a level of proficiency with problem-solving, addressing issues of conflict and uncertainty and is

orientated towards relationship maintenance, is seen to be more equipped to represent the needs of others during the business, thus, incorporate sustainable strategies for social responsibility. This is proven to be factual based on the *EO4: I always explore new and creative solutions that I am unfamiliar with during problem-solving* that has a mean value of 4.2 and standard deviation of 0.846.

The technology-orientated sustainable business models are noticed in technology-based business ventures, incubators, higher education institutions and financial services. The consensus in the literature highlighted those female entrepreneurs faced a level of difficulty to access technology-orientated sustainable business whereas the access to societal and environmentally sustainable business models presents no difficulty to access thus emphasizing the underrepresented female population (Neumeyer & Santos, 2018). This is reflected in the results obtained in Appendix E Table 9 highlighting a frequency of seven respondents operating in the technology industry obtaining a mean value of 3.2 representing a “Neutral” stance to pivoting, thus, attributed to the accessibility in these industries.

The early-stage entrepreneur involved in start-ups undergoes the creation of a new business model given the recent establishment of the business therefore, there is no business model that has been formulated. The business model transformation occurs when the existing model is changed to a new business model however the business model diversification is particularly important for this research study because of the addition of a new business model to the current business model that remains operational (Geissdoerfer et al., 2018).

The complexity of female entrepreneurs adopting a business model diversification strategy arises from firstly, failing to identify the suitable business model to use for new technological issues and secondly, from the conflicts experienced between the current and the new business model (Geissdoerfer et al., 2018). Based on the work by Geissdoerfer et al.,(2018), and the analyses of the data collected, the pivoting capabilities of a female entrepreneur had no difference between the early-stage entrepreneur and the established entrepreneur evident in Appendix E Table 9 with the number of years in business displaying mean values of around 3 “Neutral” for

each year category. The transformation of a business model can be represented through the sustainable business model. The reason for the attractiveness of a sustainable business resonates with females having stronger desirability of social and environmental business goals compared to the economic goals of male entrepreneurs (Vuorio et al., 2018).

The last aspect of discussion for business models related to the imitation business model innovation where the female entrepreneur utilises existing innovation created by incumbents in the industry, therefore, imitating the value proposition offered to customers. The innovation business model comprises the development of the technology and the creation of the value proposition. (Rask & Gunzel-Jensen, 2020). The start-up female entrepreneur proceeds to develop business model innovations associated with a demand-pull innovation approach causing the value proposition to be intertwined with the customer needs for market expansion and to gain customer loyalty. This approach is different in the incumbent where the trajectory is towards an innovation pull approach focused on internal cost-cutting, productivity levels and achieving flexibility within the organisation (Rask & Gunzel-Jensen, 2020).

The choice of a business model is closely linked to *PH4: I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback* where the value proposition is essential for business survival and the results to completely substantiate this theory can be obtained through post-pandemic investigation.

The Anova test in Table 5 and the Post Hoc Test in Table 6 highlighted a p-value of 0.039 which is a statistically significant difference between P and the levels of educations. The level of difference is noticed between with Postgraduate level displaying the significant p-value and the Secondary education level. The lean-startup method is closely associated with learning by doing hence greatly impacted by innovation through experimentation using the EO ability.

According to Leatherbee (2020), the adoption of a lean startup faces resistance when the female entrepreneur has a formal business education and practices the learning

by thinking method which is grounded in frameworks, market reports and data analysis thereby practicing caution for new business ideas convergence and failure to probe an idea. Consequently, learning by doing is easily adopted by female entrepreneurs without formal education as reliance is placed on business experience. The diversity of formal education that is not grounded in business faces the potential of errors in the business idea created through the probing of an idea within a homogenous network.

The challenge female entrepreneurs need to overcome is the limitation imposed by educational qualification. The holders of business qualifications can achieve extreme success by the implementation of probing with the potential opportunities available being exponential and coupled with the qualification levels, the business acumen and knowledge result in greater changes to business ideas ultimately leading to continuous pivoting (Leatherbee, 2020).

Though the literature noted the business experience affecting the female entrepreneurs' ability to pivot, Table 5 results showed no significant difference can be established between the years of business level in female entrepreneurs. The pivoting framework by Alejandra, Chaparro & Augusto de Vasconcelos Gomes (2021) highlighted the stages where generating options, seizing and testing stages are interdependent on the female entrepreneur's ability to generate options, gather information, and test each option for viability through experimentation. The literature that educational levels affect the intensity of the generation of new ideas for the creation of new products or services is thus supported and therefore aids in the explanation of a weak relationship between EO and P.

Through the work conducted by Kirtley (2020), early-stage entrepreneurs are considered to have pivoted after undergoing a series of strategic exits and additions as opposed to making a single decision to reorient the business strategy. A strategic decision regarding the existing of products and markets involves the realization that the original strategy was flawed thus creating a gap and is addressed by the uptake of an opportunity that constitutes a strategic addition (Kirtley, 2020). As part of the theoretical contribution, the results from the data collected oppose the discussion of

pivots by Kirtley (2020).

*SC9: During the pandemic, I have decided to terminate original products and services that no longer generated the desired performance* is ranked 12<sup>th</sup> according to mean values in the P construct, with mean value of 2.81 “Disagree and Strongly Disagree”. This implies that female entrepreneurs remain true to the original products by choosing to terminate products. *SC8: During the pandemic, I have decided the addition of numerous new products or services was required for survival and SC12: I have during the pandemic, made numerous decisions through the addition and termination of products or services been able to survive* have been deleted during the CFA model, disclosed in Appendix C. The contribution to the series of strategy exist and additions are therefore not essential for the ability to pivot.

In summary, although the relationship between EO and P is weak, there is evidence to support the foundation these constructs are essential for business survival during the pandemic.

#### **6.4 Research question 3**

R3: Aims to investigate whether the Covid-19 impact mediates the relationship between EO (Innovativeness) and Pivoting.

*H6: EO is significantly mediated by Covid-19 impact to influence the relationship of P.*

Based on the limitation posed by the statistics software, the mediation effect could not be determined thus H6 should be tested during future research studies. The discovery of the finding F1 is significant for this research study and is analysed below.

*F17: Pivoting is significantly moderated by Covid-19 Impact to influence the relationship of EO.*

This research question had been modified after the results in Chapter five. The proposed mediation was unsuccessful and the moderation effect yielded two outcomes. The first outcome tested insignificant when the moderation effect was

applied to the independent variable of EO and the dependent variable of P. The reverse relationship where P is the independent variable and EO is the dependent variable yielded a significant interaction for this relationship. Based on the findings, research question 3 had been amended to analyse the moderation effect.

The significant difference for the interchangeable properties of EO from independent to dependent variable resulted in the change from an opportunity discovery mechanism to a value creation mechanism. In addition, the relationship between EO and P yielded the same result irrespective of the change in designation of a dependent and independent variable as outlined in Appendix F Table 10 with p of 0.011 in the linear regression model.

Based on the findings by Eshima and Anderson, (2017), it supported the role of EO as a multidirectional construct that drives opportunity discovery but at the same time, can appear to be the strategic mechanism that allows an organisation to capture value from emerging opportunities. The influence of female entrepreneurs recognising resources that generate opportunities even in uncertain times will occur before the EO domain is present and emphasises that opportunity recognition is a necessary condition for the emergence of EO.

In particular, the study conducted by Wales, Covin & Monsen (2020) demonstrated the female entrepreneur experiences the strongest EO after achieving synergies between the management level, organizational process and the creation of new products or services. The applicability of this concept to this research study explained the effect of a female entrepreneur failing to embrace the sense of strategy will fail to achieve a higher EO thus noticing a disconnect between organizational process and innovation creation.

The revolution of the multidirectional concept of EO challenges the extant literature assumption that EO is used to explore new opportunities (Eshima et al., 2017). The focus of innovation creation needs to become the central focus of a female entrepreneur and be internalised as an organisational priority goal (Wales et al., 2020).

The *CV6 Terminated building lease* moderator displays a positive interaction between P and EO, however, the relationship between P and EO is a weak moderation effect. Table 7 provides the statistical data supporting the Rsquare change of 0.0423 with p of 0.0444. The terminating of the building lease was in response to the shift to a digital working environment causing the cost-saving. According to Sultan.S & Sultan (2020), the innovation strategies adopted by female entrepreneurs for business survival related to cash management strategies to reduce unnecessary costs and application of loans to facilitate cash flow required to allow the business to grow to attract customers. Although the pandemic caused the female entrepreneur to perform cost-cutting to reduce the loss experienced, the change of resources changed the attention of the female entrepreneur and thus promoted a level of risk to pursue opportunities for survival (Eshima et al., 2017).

The available resources allowed the opportunities for pivoting to occur although the relationship was a weak moderation effect. The business model based on research confirmed female entrepreneurs choose to adapt during Covid-19 by reducing operational costs and pivoting the business models to enable seizing opportunities (Manolova et al., 2020). The limitation imposed by the female entrepreneur relating to the size of the operation, funding availability therefore explains the incremental innovation approach adopted by female entrepreneurs.

The *CV2 Closed business temporarily* moderator presented a positive interaction between P and EO and a moderate relationship effect was disclosed with a p of 0.0258 and Rsquare of 0.0517 outlined in Table 7. The impact of Covid-19 had a medium effect on female entrepreneurs given the frequencies for the number of respondents selecting Yes for “Closed business temporarily” was 30 whereas the hard impact “Closed business permanently” was six as outlined in Appendix E, Table 9.

The Covid-19 pandemic shifted the global movement of international trades and created logistical transport problems in low resilience countries (Cannavale, Nadali & Espempio, 2020). The nation-wide lockdown and state implemented policies

incorporated by governments forced entrepreneurs into an environment of uncertainty, business activities were disrupted and the physical business relationship was prohibited to curb the spread of the Covid-19 virus. Entrepreneurs were forced to adapt and respond rapidly to the environment for business survival (Scheidgen et al., 2021). The rapid disruption from Covid-19 created a pressurized business environment in which EO is well suited for the female entrepreneur to manage in this situation. The level of flexibility and adaptability arising from EO is present in the rejuvenation of an organisation's processes, activities, internal capabilities and structures (Covin et al., 2020).

Female entrepreneurs demonstrating resilience during Covid-19 have underscored consequences for SME business survival and development. A critical decision about the long-term strategic direction of the business faced many female entrepreneurs with the decision to respond first for short-term survival at the onset of the pandemic and then develop the strategy in response to the exogenous shocks (Herbane, 2019).

The salient effect of the pandemic brought changes to the organisation resources whereby new resource combinations were available for the female entrepreneur to proceed with a course of pivoting hence improving the adaptability of female entrepreneurs to respond in a crisis (Eshima et al., 2017).

Through the reflection, learning and adjusting of actions, the full impact and consequence of the crisis were understood and although many have been unprepared to deal with the crisis due to the absence of resilience plans or crisis management procedures, the female entrepreneur had survived through resilience (Herbane, 2019). Further to this, long-term sustainability is achieved through the continuous innovation of new ideas and product development, displayed by EO characteristics of inimitability, an intense level of innovation and an inclination towards risk acceptance (Li et al., 2021).

Further opportunity and flexibility strategies created a new avenue for female entrepreneurs to provide a solution to the pandemic through the industries of producing masks and sanitizers. The female entrepreneur that was multi-skilled and

had flexible business operations were able to manage the new situation (Sultan.S & Sultan, 2020).

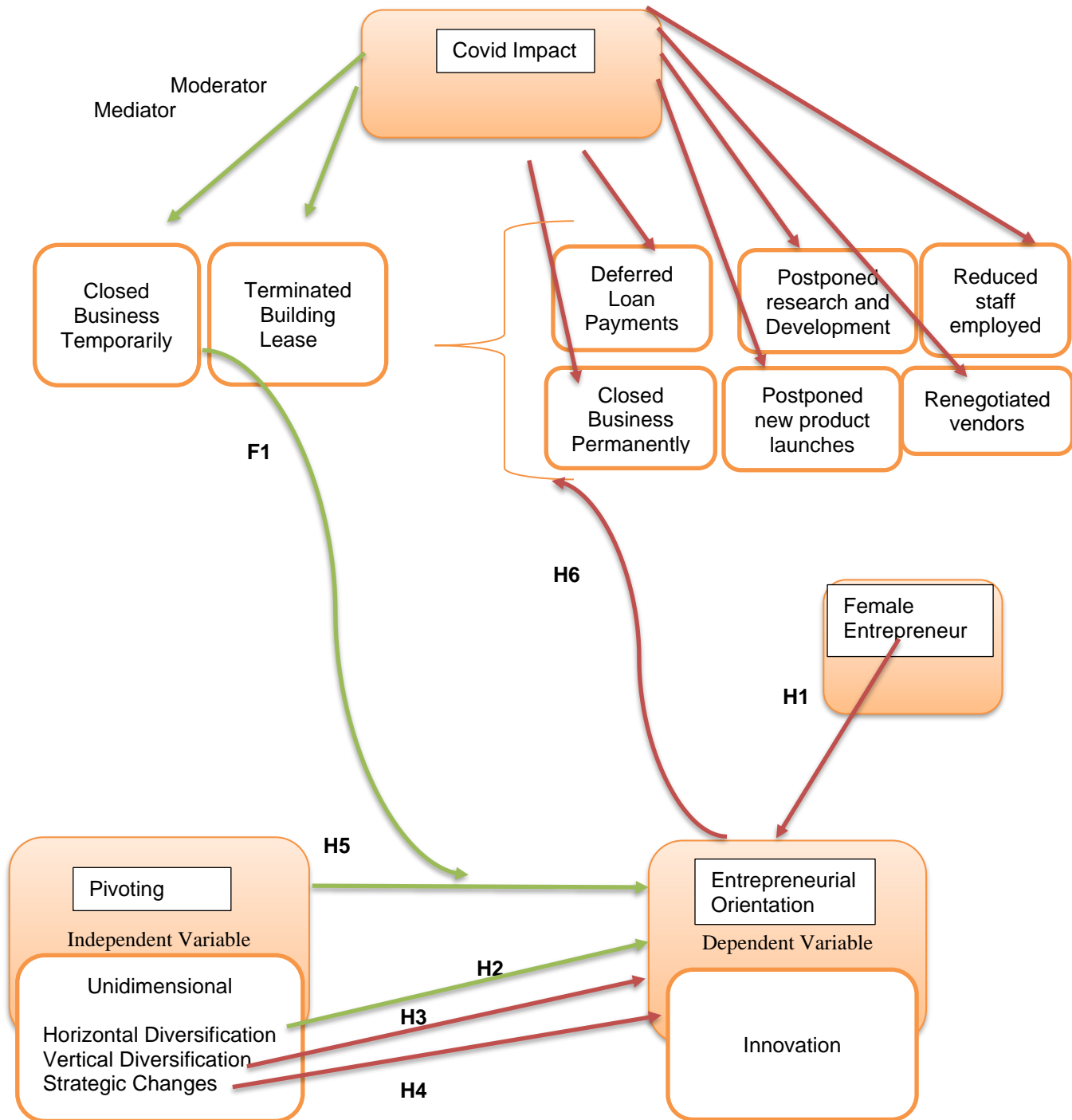
The controversy is how far from the original product has the female entrepreneur expanded to consider such action a pivot. The findings from the literature highlighted the usual action incorporating the combination of a new resource is an extension of the original product and seldomly a complete departure from the organisation offerings. The impact of resources improves the understanding of the expectation from the market and utilising the adaptive capacity thus promotes EO and results in the female entrepreneur experimenting less whilst exploiting more options based on the lowered uncertainty (Eshima et al., 2017).

The importance of this research shows that female entrepreneurs in South Africa did pivoting through incremental innovation to effect changes to business models and offer new products or services. The lockdown restrictions provided the female entrepreneur with more time to plan and adapt to the conditions of the pandemic. The innovation strategies adopted during the pandemic will have long-term consequences and thus explained the weak relationship between EO and P. The impact of this research study demonstrates the EO value creation mechanism is considered significant compared to the ability of opportunity discovery. This can be noticed in the female entrepreneur's ability to shift to an online business which created new networks and network platforms to provide support to each other and contribute to the sales of each other through the inter-purchase mechanism (Sultan.S & Sultan, 2020).

The main attribute of pivoting is the business model strategy where the female entrepreneur changed to a digital business environment and created new products and services through innovation to meet the changing demand of consumers' preferences. The outcome was that perseverance is not a tool that can be used for business sustainability whereas pivoting is a tool that can be applied.

The Covid-19 pandemic deviated from the resource accumulation principle into a dynamic capability mode where the female entrepreneur discovers the importance

of innovation, learning and a good strategy (Solano et al., 2018). In conclusion, the Covid-19 impacts are moderators of the pivoting ability of female entrepreneurs in South Africa and thus influences the relationship between P and EO.



**Figure 11:** The revised model used during the research study to test the moderating role of the Covid-19 impact between pivoting and entrepreneurial orientation

Note: The green arrows represent the significant hypotheses and the red arrows represent the insignificant hypotheses.

## 6.5 Summary

In summary, the female entrepreneur in South Africa has pivoted through incremental innovation, and the EO is required to achieve business success. The favorable pivoting model is horizontal diversification. The resilience demonstrated by the female entrepreneur permitted the necessary actions required for adaptation to the changing environment. The business sustainability during the pandemic was conducted with a short-term view because the female entrepreneur was cautious during the pandemic hence making a decision that was not disruptive.

The four key points from this research study are summarized below:

- **Business Models** – The importance of business models is significant for the business survival. The insights from this research study drives the change of business models that occurred during the pandemic and created opportunities for the female entrepreneur. The importance of having the right business model at the onset of the business can influence the success of the business during future exogenous shocks. The data collected highlighted those female entrepreneurs that changed business models pre-pandemic conditions were able to flourish. The female entrepreneurs that changed business models during the pandemic made changes to a digital environment that assist in the survival of a business.
- **Perseverance's Model** – The concept of perseverance through distribution channels and pricing models are not essential drivers for business sustainability during the pandemic. The resilience of female entrepreneurs prevented the perseverance from occurring thus highlighting the level of resilience in female entrepreneurs were enhanced during the pandemic
- **Resilience** – The level of resilience in female entrepreneurs created a mindset for business survival. Although the changes conducted by the female entrepreneur during the pandemic were relatively small and cautious this

demonstrates the long-term strategy developed during the pandemic.

- Resources – The significant finding regarding resource availability drives the direction of the business and the level of opportunities that a female entrepreneur can exploit. The conditions during the pandemic provided evidence that female entrepreneurs reduced resources during the pandemic to survive. The outcome from this research study indicated a manner of resources conservation is required post-pandemic for business survival during exogenous shocks. The importance for female entrepreneurs is to change the manner of resource utilization that will create avenues for future growth.

## **Chapter 7: Conclusion**

### **7.1 Introduction**

The research study investigated the influence of entrepreneurial orientation and each of the pivoting methods by factoring in the effect of innovation. The female entrepreneur in South Africa has faced numerous challenges during the pandemic and the actions taken by the female entrepreneur were analysed to understand the effect of Covid-19 on business sustainability.

The extant literature on female entrepreneurs demonstrated females orientate towards a low level of innovation thus affecting the ability to pivot and survive during the pandemic. The research study has discovered through statistically testing the main drivers of the actions taken during the pandemic that these actions relate to the closing of business temporarily and the termination of building leases. The effects of national lockdown forced the organisation to stop operation and severely affected the cash flow status of many female entrepreneurs.

Female entrepreneurs were faced with a lack of funding, resource capacity constraints, limited networking capabilities and the costly implementation of a technology-driven process. The resilience of the female entrepreneur enhanced the level of adaptability during the pandemic thus supporting literature indicating gender is not the deterrent of business survival because male entrepreneurs and female entrepreneurs performed at the same level of adaptability.

The importance of this research study was the testing of EO as an opportunity driver but more importantly, the concept of EO as a value creation was discovered during the testing phase, thus, implying the low innovation levels exhibited in female entrepreneurs during Covid-19 are the mechanisms available to the female entrepreneur to utilize after the strategic decision is finalized. The change in direction of the research study highlights the unpredictability instilled by the pandemic, therefore, providing evidence of the drivers towards pivoting is related to the resources of the organisation.

The female entrepreneur underwent actions that reduced the financial burden, created resource capacity and provided the female entrepreneur the time required to assess the business, hence deciding on a course of action suitable. The salient pivoting method implemented during the pandemic was the adjustment to the business models by incorporating innovation. The immediate impact of the pandemic forced businesses to consider the digital world for operation thus emphasizing the importance of innovation.

The role of business model innovation can change the entire course of the business or certain aspects of the business. The female entrepreneurs' motivation for starting a business is purpose-driven and further creates the opportunity for female entrepreneurs to expand into a sustainable business based on social and environmental desires. The research study was unable to establish the method of business model change implemented by the female entrepreneur however, the pivoting capability of females was enhanced during the pandemic.

The significant outcome from this research study provided support that perseverance levels of female entrepreneurs are low, thus, the maintenance of the original business idea was considered the inappropriate course of action to survive the pandemic. Throughout literature, it was highlighted the notion of passion for a product or service can change the direction of the business. Female entrepreneurs in South Africa were displaying behavioral actions of relinquishing passion for products or services that were originally offered. Consequently, the female entrepreneurs' ability to understand the market orientation of the change in consumers preferences promoted the creation of new products or services through innovation.

In contrast to the resilience displayed by the female entrepreneur in South Africa, a level of caution was evident in the utilisation of disruptive innovation to enter new markets that were unfavorable as a method of innovation adopted. The long-term strategic focus of female entrepreneurs drove the path for incremental innovation thus emphasizing the creation of new products and services.

The research study, in addition to providing the pivoting method considered

necessary for survival during the pandemic has thus been able to identify that EO is strongest towards product innovation compared to the process innovation, especially applicable during the period of uncertainty.

In conclusion of this research study, a business sustainability framework had been developed from the results of the data collected and further developed from the literature for crisis management. The framework developed is a tool that can be used by the female entrepreneur during a future crisis or to guide the female entrepreneur on the approaches that can be adopted to prevent business failure. The pandemic has resulted in businesses created during a pandemic and are thus having a greater level of success for survival and flourishing when a business goes back to normal.

## **7.2 Theoretical Contributions**

The theoretical contribution relates to the investigation of female entrepreneurs in South Africa and the effect EO has on the ability to use innovation during the pandemic for survival. The outcomes from each research question contribute to the theory for entrepreneurship and strategy.

The first research question supports the theory developed around female entrepreneurs' adoption of innovation influenced by EO. The contribution of this research study provided evidence that female entrepreneurs in South Africa responded during the crisis and this response was not different from the literature conducted during an economic downturn.

The second research question contributes to the theory of pivoting by providing evidence the use of business models is considered the main pivoting method during the pandemic. In addition to this, the contribution to theory highlighted the multilevel factors of pivoting which are essential, thus the female entrepreneur will undertake decisions that affect a strategic change. The pivoting framework conducted by Alejandra, Chaparro & Augusto de Vasconcelos Gomes (2021) had been tested during this research study and the finding contributed to the development of the framework.

The pivoting framework indicated the entrepreneur considering pivoting will begin to recognise the need to pivot from the stimuli of the environment and the resources configuration according to the framework is the last step where the organisation ensures the necessary resources are available. The outcome through this research study supported the various aspects of the framework however, the evidence from the impact of the pandemic changed the resources within the organisation. Thus, the shift in resources was the driving factor to prompt the pivoting ability of the female entrepreneur to start pivoting and the “reconfiguration stage outlined by Alejandra, Chaparro & Augusto de Vasconcelos Gomes, (2021) occurred at the beginning instead of as a final step. Further to this, the theoretical contribution provides data evidence for the framework which was theoretically developed by Alejandra, Chaparro & Augusto de Vasconcelos Gomes,(2021) however never tested.

The last research question provided evidence towards the significant moderation effects outlining the actions female entrepreneurs performed during the pandemic. The contribution of the EO as a value creation mechanism has provided evidence of this concepts’ applicability during the pandemic. There is a vast literature on the opportunity discovery mechanism of EO however the work by Eshima and Anderson, (2017) is limited, therefore this research study contributes to the multidirectional concept of EO.

The resilience and the commitment by female entrepreneurs have been tested through this research study and contribute through the testing of the moderation effect “closed business permanently” that although the time for decision making was short coupled with the family responsibilities, the female entrepreneur pushed through and fought to survive. The commentaries on pivoting were tested during this research study to provide data collection to support the findings and noted the business that did survive were able to pivot. Further support was provided by the female entrepreneur that pivoted, conducted it in an agile manner through decision making (Shepherd, 2020; Maritz et al., 2020).

The contribution to the SE field provides support that pivoting can be the complementary part of EO for the female entrepreneur to understand and assess the internal and external environmental factors that affect the business sustainability.

### **7.3 Implications for Business**

The impact of Covid-19 forced female entrepreneurs to shift business onto a digital platform. The level of resilience displayed by the female entrepreneur enables the adaptation of business for survival. Although the research data provided evidence the impact of Covid-19 had a medium effect on the female entrepreneur, the female entrepreneur was thus able to use innovation to change business operations.

The main implication for business is through the pandemic, the cost-conscious female entrepreneur improved cash flow by reducing costs thereby resources were available to begin the change. The female entrepreneur undertook “Closing the business temporarily” and “terminating business lease” as the main drivers that prompted the female entrepreneur to pivot the business. The feedback received from a respondent through a telephonic conversation highlighted the importance that all female entrepreneurs that pivot may not achieve success because a successful pivot requires the learning of a new skill.

The innovation provided this valuable skill to female entrepreneurs by beginning the change of business models, adjusting new products and services offered to customers needs and creation of new products and services. Through this research study, the type of innovation embraced by the female entrepreneur related to incremental innovation and the confirmation of disruptive innovation into new markets was considered a risky option. The time taken during the pandemic was quick, hence the female entrepreneur in South Africa conforms to the literature highlighting the long-term strategy characteristics of female entrepreneurs. Consequently, through this characteristic, less risky options were undertaken to ensure business survival.

The relationship between P and EO through the data provided a weak relationship that was explained through the caution demonstrated by the female entrepreneur. The implication for business from this research study provides evidence that although female entrepreneurs have low innovation levels, this has been able to sustain the business. The multidirectional EO concept demonstrated the ability of a

value creation mechanism is vital during periods of uncertainty whereas the opportunity discovery mechanism occurs under stable conditions. The investigation of the EO construct supports the view that female entrepreneurs change routines, processes and procedures before considering new products or services. The evidence shows the link between routine and process and procedures, unfortunately, failed the test for perseverance. The significant aspects support those female entrepreneurs in South Africa who choose to pivot mainly through horizontal diversification opting for business model changes.

The business sustainability framework created from the data collected and further adapted through literature emphasizes the importance of maintaining a resource conservative approach during the crisis and post-crisis to entail the future growth of a business through continuous innovation. The framework guides the female entrepreneur towards steps that can maintain the vision of the business, create available resource capacity and the tools through business models that can be implemented for survival. The relevance of planning and posing the ability to investigate alternative viable options is essential for female entrepreneurs to conduct on a timely basis. The application of “Test Two Chose One” is a useful tool for assessing viable options and therefore prevents the paradox of entrepreneurship from occurring (Gans et al., 2019).

#### **7.4 Recommendations for Future Research**

The recommendation for future research is the investigation of the mediator role of the Covid-19 impact on the relationship between EO and P using continuous data collection. This research study was unable to test the mediator effect due to the limitation in data collected. Through this research study establishes the female entrepreneur perceptions of EO during the pandemic in South Africa, the proposed future research lies with the statistical test to be conducted. The validation from these statistical tests establishes the relationship between EO and female entrepreneurs. Future research may investigate the moderator effects beyond gender and consider the post -Covid-19 implications of these actions.

The actions that were taken by the female entrepreneur during the pandemic can be

investigated if these actions result in business continuation and establish if the female entrepreneur maintained the decisions made during the pandemic.

The scope for research is the potential outline of a disaster management framework to be used by entrepreneurs in moments of uncertainty. The business sustainability framework proposed from this research study described in chapter six provides future testing avenues to investigate the viability of the framework post Covid-19. The post-Covid 19 phase was designed from literature however the viability of this phase in the framework requires further testing and development. The impact of the crisis remains largely unknown and could potentially change the proposed framework.

Although this research study was conducted on female entrepreneurs which led to the development of the business sustainability framework, the applicability of the framework to include male entrepreneurs is an avenue worth pursuing even if literature denotes gender differences are not significant for adaption during the pandemic.

The researcher considered the interplay of one of the sub-dimensions of EO such as innovation and the influence of innovation on pivoting. The relationship established in this research study was a weak correlation indicating the remaining sub-dimension of EO like, risk-taking, proactiveness and competition could potentially enhance the relationship between EO-P in female entrepreneurs.

The concept of innovation and technology has been the driving force behind this research study thereby, the areas for future research paves the investigation into the purely online and e-commerce businesses operated by female entrepreneurs. As the pandemic shifted the world into the digital era, the importance of female entrepreneurs pivoting and responding to an innovation EO can provide grounds to establish if innovation is the main driver for EO in this context.

The female entrepreneurs' orientation toward socially driven business is an area for future research. The potential for having pivoted the business during the pandemic

to address a social need arising from the environment. This changed the business models accordingly and raises the question around if these business sustainable models can create the evolution to into sustainability. The use of innovation in terms of EO and the pivoting mechanism can be used to address the lack of sustainable business or the expansion into these industries.

The significant finding discovered from the data collected pertaining to F1 outlined in Chapter five provides grounds for future research into the resources availability of female entrepreneurs. Although the data collected during this research study guides evidence to support the new development, future testing can involve an extensive understanding of how resources affects business sustainability after the pandemic.

## **7.5 Limitations**

The limitation to this research study is the concept of pivoting is not fully grounded and tested in prior literature. The model of pivoting through literature explains the various models of pivoting and the recent establishment of a pivoting framework has been applied in this research study to test the theoretical outcome. The limitations to the recent pivoting framework being under-tested could affect the assumptions made during this research study and the boundaries of influence of the new framework are not available to the researcher.

The sample size collected during the research study was limited and the geographical scope covered in this research study imposes on the database that can be accessed. Although the research study included a broad array of demographics, expansion of the geographical scope to include the majority of the cities within South Africa would provide greater insight into the relationship between entrepreneurial orientation and pivoting in female entrepreneurs.

The sampling bias should be considered as a limitation due to the small size of the sample with the effects experienced during this research possibly being large and thus, a marginal error could have been possible.

The sampling technique utilised was a random sampling technique that relied on the

volunteer participation of the female entrepreneur. The lack of an entrepreneurial female database in South Africa led to the utilization of social media networks to find potential respondents. The problematic area of using social media platforms relates to operating in a dynamic environment that provides potential databases that can lead to a misrepresentation of the female entrepreneur required for this research study.

Lastly, the research study was also limited in the manner that causality had not been tested between the variables. The correlation effect had been tested however the cause-effect may provide limitations to this research study.

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## Appendix A: Measurement Instrument -Survey questions with coding for SPSS

### Section A: Biographical Details

1. Are you a female entrepreneur?	Yes	1
	No	2
2. Do you operate a business in South Africa?	Yes	1
	No	2
3. Which industry do you operate in?		
	Beauty, Cosmetics, Hair, and Nails	1
	Tourism and Hospitality	2
	Event Planning, Catering, and Restaurants	3
	Technology sector	4
	Consulting	5
	Financial services	6
	Retail	7
	Manufacturing	8
	Accounting	9
	Agriculture	10
	Architecture, Building, and Construction	11
	Cleaning services	12
	Digital Marketing	13
	Education	14
	Health & wellness	15
	Legal	16
	Marketing & Graphic Design	17
	Medical	18
	Pet Service	19
	Property Management	20
	Social Networking	21
4. Age of entrepreneur		
	Younger than 20 years	1
	20-29	2
	30-39	3
	40-49	4
	50-59	5
	60 or older	6

5. How many years are you in business?		
	0-3 year	1
	3-5 year	2
	5-10 year	3
	Longer than 10 years	4
6. Number of businesses held		
	0-1	1
	2-5	2
	5-10	3
	More than 10	4
7. The location of a business		
	Durban	1
	Johannesburg	2
	Cape Town	3
	Bloemfontein	4
	Online	5
	Paarl	6
	Parys	7
	Pietermaritzburg	8
	Port Elizabeth	9
	Pretoria	10
	Thaba Nchu	11
8. Level of education		
	Secondary Education (High School)	1
	Degree	2
	Postgraduate	3
	Master	4
	Ph.D	5
	Other? Please specify	6
9. How many employees do you have?		
	0-20	1
	20-50	2
	50-100	3
	Over 100	4

Section B: Entrepreneurial Orientation

On a scale of 1 to 5 where 1= Strongly Disagree,2= Disagree,3= Neutral, 4= Agree, and 5= Strongly Agree, indicate the extent to which you agree with each of the following statements.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EO1	10. I have during Covid-19, experienced a small amount of difficulty with change and resuming business after the disruption.	1	2	3	4	5
EO2	11. I have learned during the pandemic to quickly adapt to new routines, processes, procedures.	1	2	3	4	5
EO3	12. I have learned during the pandemic to quickly adapt to a different way of working.	1	2	3	4	5
EO4	13. I always explore new and creative solutions that I am unfamiliar with during problem-solving.	1	2	3	4	5
EO5	14. I have during Covid-19, changed the firms' direction by promoting new products for new markets	1	2	3	4	5
EO6	15. I am open and flexible to different innovation that allows opportunities to be recognized	1	2	3	4	5
EO7	16. I am willing to exploit opportunities during Covid-19	1	2	3	4	5
EO8	17. During the pandemic, I was continually seeking new markets to enter	1	2	3	4	5
EO9	18. I have been considering new suppliers and customers to expand the business	1	2	3	4	5
EO10	19. I have been experimenting with decision options and adjusting the plan through learning	1	2	3	4	5
EO11	20. I have taken advantage of resources within the firm to survive the pandemic	1	2	3	4	5

Section C: Pivoting- Horizontal and Vertical Diversification

On a scale of 1 to 5 where 1= Strongly Disagree,2= Disagree,3= Neutral, 4= Agree, and 5= Strongly Agree, indicate the extent to which you agree with each of the following statements.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PH1	21. I have achieved sustainability through the continuous innovation of new ideas and product development.	1	2	3	4	5
PH2	22. I have created a new product or service offering as a replacement for existing offerings.	1	2	3	4	5
PH3	23. I have entered into new markets to seek new opportunities.	1	2	3	4	5
PH4	24. I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback.	1	2	3	4	5

PH5	25. I have behaved in a risk-averse manner when deciding on new offerings.	1	2	3	4	5
PH6	26. I have changed the business model to adapt to the needs of the environment	1	2	3	4	5
PV1	27. I have made changes to the firms' value chain through the engagement of external stakeholders.	1	2	3	4	5
PV2	28. I have adjusted the firm's product for retail through an online platform	1	2	3	4	5
PV3	29. I have adjusted the price modeling because of the pandemic	1	2	3	4	5
PV4	30. I have relied on the marketing of the existing product or service to allow business continuation.	1	2	3	4	5
PV5	31. I have a strong passion for the product or service and through this passion, I choose to not have new products or services	1	2	3	4	5
PV6	32. I have a strong passion for the product or service and through this passion, I choose to not look for new markets to enter.	1	2	3	4	5
PV7	33. I believe preserving the original business idea during the pandemic is an optimal decision for survival.	1	2	3	4	5
PV8	34. I have reacted in response to competitors movements to gain a competitive advantage	1	2	3	4	5

#### Section D: Strategic Change

On a scale of 1 to 5 where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree, indicate the extent to which you agree with each of the following statements.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SC1	35. During the pandemic, the strategy developed for the business changed with new information.	1	2	3	4	5
SC2	36. During the pandemic, the strategy developed for the business was limited by my business knowledge	1	2	3	4	5
SC3	37. During the pandemic, the strategy developed for the business was limited to the performance history of the firm.	1	2	3	4	5
SC4	38. I found it hard to decide on which strategic change was the most viable option to act upon	1	2	3	4	5
SC5	39. I was more willing to seek opportunities and accept a level of risk.	1	2	3	4	5
SC6	40. I considered options that provided only reduced risk levels.	1	2	3	4	5
SC7	41. I considered not taking any business action during the pandemic that was risky.	1	2	3	4	5
SC8	42. During the pandemic, I have decided the addition of numerous new products or services was required for survival	1	2	3	4	5

SC9	43. During the pandemic, I have decided to terminate original products and services that no longer generated the desired performance.	1	2	3	4	5
SC10	44. I have experienced during the pandemic, the time I have to make decisions was short and I had to act fast.	1	2	3	4	5
SC11	45. I have stayed committed to the action I had to take, even when I failed numerous, and things seemed hopeless.	1	2	3	4	5
SC12	46. I have during the pandemic, made numerous decisions through the addition and termination of products or services been able to survive.	1	2	3	4	5

Section E: Covid-19 Impact on Female Entrepreneurs

Multiple response questions: Scale is No= Not selected, Yes = Selected

		No	Yes
CV1	Closed business permanently	0	1
CV2	Closed business temporarily	0	1
CV3	Renegotiated vendor contracts	0	1
CV4	Deferred loan payments and debt obligations	0	1
CV5	Reduced staff employed	0	1
CV6	Terminated building lease	0	1
CV7	Postponed new product launches	0	1
CV8	Postponed Research and Development projects	0	1

Appendix B: Confirmatory Factor Analysis Amos Models

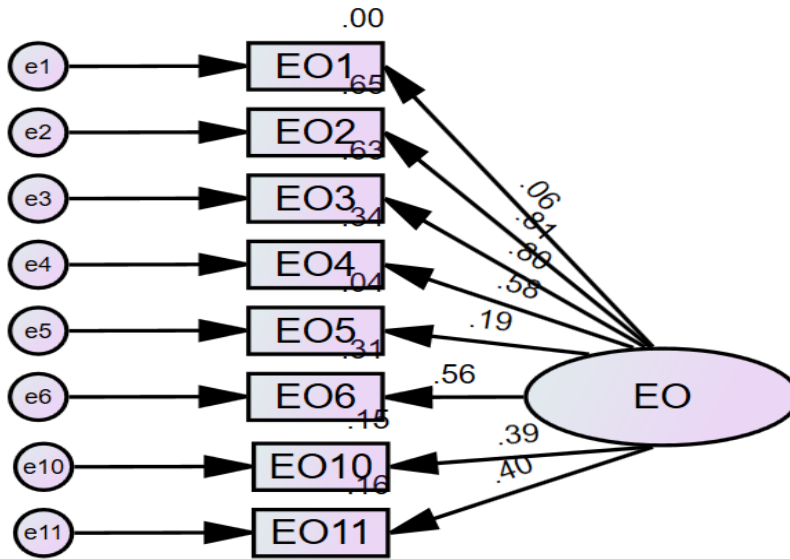


Figure 12: Entrepreneurial Orientation Amos Model

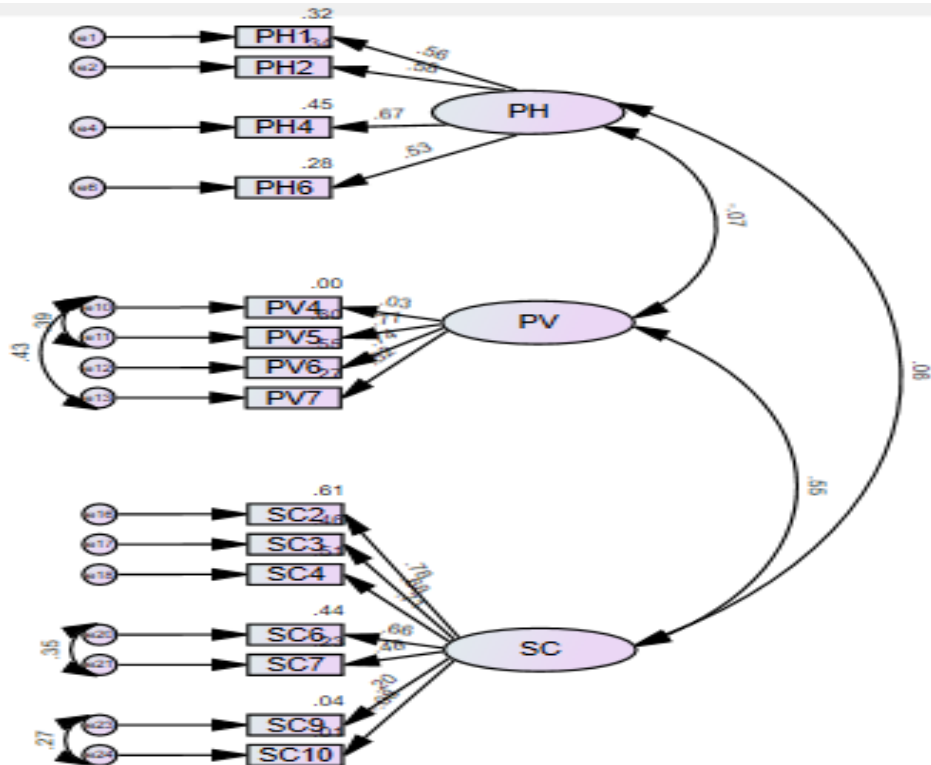


Figure 13: Pivoting first-order and second-order construct Amos Model

### Appendix C: CFA model questions deleted

Scale	DELETED QUESTIONS	Question description
Entrepreneurial Orientation	EO7,EO8,EO9	EO7.I am willing to exploit opportunities during Covid-19.
		EO8.During the pandemic, I was continually seeking new markets to enter
		EO9.I have been considering new suppliers and customers to expand the business
Pivoting	PH3,PH5,PV1,PV2,PV3,PV8,SC1,SC5,SC8,SC11,SC12	PH3.I have entered into new markets to seek new opportunities.
		PH5.I have behaved in a risk-averse manner when deciding on new offerings.
		PV1.I have made changes to the firms' value chain through the engagement of external stakeholders.
		PV2.I have adjusted the firm's product for retail through an online platform
		PV3.I have adjusted the price modeling because of the pandemic
		PV8.I have reacted in response to competitors movements to gain a competitive advantage
		SC1.During the pandemic, the strategy developed for the business changed with new information.
		SC5.I was more willing to seek opportunities and accept a level of risk.
		SC8.During the pandemic, I have decided the addition of numerous new products or services was required for survival
		SC11.I have stayed committed to the action I had to take, even when I failed numerously, and things seemed hopeless
		SC12.I have during the pandemic, made numerous decisions through the addition and termination of products or services been able to survive.

## Appendix D: The insights from the open comment section of the survey

Table 8: Female Entrepreneurs feedback on the survey

Number of Respondents	Feedback	Demographics
1	Many businesses closed permanently leaving many jobless due to the pandemic and this had an impact financially for many. We must think creatively and out of the box in the business world	Age of entrepreneur 30-39, Years of the business operation 5-10 years, Number of Business held 0-1, Level of Education Secondary Education(High School), Organisation Size 0-20
2	Running a new business in the alcohol industry has been tough however I did none of the decisions above. I maintained my products; I am self-funded with no loan deferred.	Age of entrepreneur 30-39, Years of the business operation 0-3 years, Number of Business held 2-5, Level of Education Post Graduate, Organisation Size 0-20
3	Covid 19 had an impact on many businesses, and I believe the initial reasons why I started this business allowed me to be able to want to adapt and learn so I can survive.	Age of entrepreneur 30-39, Years of the business operation 0-3 years, Number of Business held 0-1, Level of Education Degree, Organisation Size 0-20
4	Thank you for choosing me to participate in this survey. My business took quite a knock during the pandemic, I lost clients and revenue. It was hard trying to get new clientele as many people had copied the same business I'm doing.	Age of entrepreneur 30-39, Years of the business operation 0-3 years, Number of Business held 2-5, Level of Education Degree, Organisation Size 0-20
5	I continue to navigate the uncharted, rough waters of Covid-19	Age of entrepreneur 50-59, Years of the business operation 5-10 years, Number of Business held 2-5, Level of Education Diploma/Certificate, Organisation Size 20-50
6	My business is mainly online as I provide digital marketing services and when the pandemic hit most clients and qualified leads cut down on marketing budgets which had an impact on the services I offered. However, towards November of 2020, I started seeing a rise in requests for brand development, social media management, and website design. I had to redefine my niche and create new client profiles. I also enrolled in a business school to help me with decision making and as well as automating some of my processes. Researched simpler methods of providing the same services, but cost-effectively for both me and my target market and the demand is starting to improve.	Age of entrepreneur 40-49, Years of the business operation 0-3 years, Number of Business held 2-5, Level of Education Degree, Organisation Size 0-20

7	The exercise has helped me reflect on the business journey since the pandemic struck	Age of entrepreneur 50-59, Years of business operation Longer than 10 years, Number of Business held 2-5, Level of Education Diploma/Certificate, Organisation Size 0-20
8	We experienced growth through making current products attractive to new markets. The lockdown meant customers needed more products from us than the city as they could not travel.	Age of entrepreneur 50-59, Years of business operation Longer than 10 years, Number of Business held 5-10, Level of Education Masters, Organisation Size 20-50
9	It was lovely to participate and reflect on all I've done in my business over the past 18 months. It has been tough to navigate, but I truly believe that keeping my ear on the ground as well as taking risks and following my gut instinct has been the main reasons behind my success. Also, putting my head together with like-minded individuals in business and networking with them has brought success to my businesses and theirs. Having faith that I had the knowledge and experience to take the risks I did was also paramount.	Age of entrepreneur 30-39, Years of the business operation 5-10 years, Number of Business held 2-5, Level of Education Diploma/Certificate, Organisation Size 0-20
10	Thank you for affording me the opportunity. Some of the product-based decisions were made before Covid-19 hit. I narrowed down my offering and tweaked the business model. My focus during covid was to up my business knowledge and to learn and apply other skills a business needs to survive and thrive. I did not have the hardware and software needed to do that before Covid-19	Age of entrepreneur 30-39, Years of the business operation 5-10 years, Number of Business held 0-1, Level of Education Secondary Education(High School), Organisation Size 0-20

## Appendix E: Descriptive Statistics

Table 9: - Descriptive Statistics per question and variable

### Entrepreneurial Orientation

		Strongly Disagree & Disagree	Neutral	Strongly Agree & Agree	Total	Mean	Standard Deviation	Rank By Mean
EO1 .I have during Covid-19, experienced a small amount of difficulty with change and resuming business after the disruption.	Count	19	8	64	91	3.59	1.211	10
	Row N %	21%	9%	70%	100.0%			
EO2.I have learned during the pandemic to quickly adapt to new routines, processes, procedures.	Count	3	5	83	91	4.43	0.791	1
	Row N %	3%	5%	91%	100.0%			
EO3.I have learned during the pandemic to quickly adapt to a different way of working.	Count	2	4	85	91	4.41	0.774	2
	Row N %	2%	4%	93%	100.0%			
EO4.I always explore new and creative solutions that I am unfamiliar with during problem-solving	Count	4	7	80	91	4.2	0.846	4
	Row N %	4%	8%	88%	100.0%			
EO5.I have during Covid-19, changed the firms' direction by promoting new products for new markets	Count	16	19	56	91	3.59	1.085	10
	Row N %	18%	21%	62%	100.0%			
EO6.I am open and flexible to different innovation that allows opportunities to be recognized	Count	1	2	88	91	4.33	0.633	3
	Row N %	1%	2%	97%	100.0%			
EO7.I am willing to exploit opportunities during Covid-19	Count	11	8	72	91	3.96	1.064	7
	Row N %	12%	9%	79%	100.0%			
EO8.During the pandemic, I was continually seeking new markets to enter	Count	13	11	67	91	3.89	1.059	8
	Row N %	14%	12%	74%	100.0%			
EO9.I have been considering new suppliers and customers to expand the business	Count	6	9	76	91	4.09	0.865	5
	Row N %	7%	10%	84%	100.0%			
EO10.I have been experimenting with decision options and adjusting the plan through learning	Count	5	8	78	91	4.02	0.73	6
	Row N %	5%	9%	86%	100.0%			
EO11.I have taken advantage of resources within the firm to survive the pandemic	Count	14	11	66	91	3.75	0.995	9
	Row N %	15%	12%	73%	100.0%			
Total Entrepreneurial Orientation	Count	94.00	92.00	815.00	1,001.00	4.040	0.475	

## Horizontal Diversification

		Strongly Disagree & Disagree	Neutral	Strongly Agree & Agree	Total	Mean	Standard Deviation	Rank By Mean
PH1.I have achieved sustainability through the continuous innovation of new ideas and product development.	Count	15	14	62	91	3.67	1.001	4
	Row N %	16%	15%	68%	100.0%			
PH2.I have created a new product or service offering as a replacement for existing offerings.	Count	22	18	51	91	3.37	1.082	5
	Row N %	24%	20%	56%	100.0%			
PH3.I have entered into new markets to seek new opportunities.	Count	15	13	63	91	3.70	1.049	3
	Row N %	16%	14%	69%	100.0%			
PH4.I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback.	Count	9	18	64	91	3.73	0.804	2
	Row N %	10%	20%	70%	100.0%			
PH5.I have behaved in a risk-averse manner when deciding on new offerings.	Count	23	20	48	91	3.32	1.074	6
	Row N %	25%	22%	53%	100.0%			
PH6.I have changed the business model to adapt to the needs of the environment	Count	8	12	71	91	3.92	0.885	1
	Row N %	9%	13%	78%	100.0%			
Pivoting -Horizontal Diversification	Count	92.00	95.00	359.00	546.00	3.67	0.672	4

## Vertical Diversification

		Strongly Disagree & Disagree	Neutral	Strongly Agree & Agree	Total	Mean	Standard Deviation	Rank By Mean
PV1.I have made changes to the firms' value chain through the engagement of external stakeholders.	Count	25	19	47	91	3.32	1.124	5
	Row N %	27%	21%	52%	100.0%			
PV2.I have adjusted the firm's product for retail through an online platform	Count	24	11	56	91	3.52	1.259	2
	Row N %	26%	12%	62%	100.0%			
PV3.I have adjusted the price modeling because of the pandemic	Count	25	11	55	91	3.41	1.247	3
	Row N %	27%	12%	60%	100.0%			
PV4.I have relied on the marketing of the existing product or service to allow business continuation.	Count	18	9	64	91	3.68	1.053	1
	Row N %	20%	10%	70%	100.0%			
PV5.I have a strong passion for the product or service and through this passion, I choose to not have new products or services	Count	42	19	30	91	2.85	1.229	7
	Row N %	46%	21%	33%	100.0%			
PV6.I have a strong passion for the product or service and through this passion, I choose to not look for new markets to enter.	Count	49	15	27	91	2.66	1.276	8
	Row N %	54%	16%	30%	100.0%			
PV7.I believe preserving the original business idea during the pandemic is an optimal decision for survival.	Count	32	22	37	91	3.05	1.196	6
	Row N %	35%	24%	41%	100.0%			
PV8.I have reacted in response to competitors movements to gain a competitive advantage	Count	24	17	50	91	3.36	1.121	4
	Row N %	26%	19%	55%	100.0%			
Pivoting -Vertical Diversification	Count	239.00	123.00	366.00	728.00	3.0604	0.8493	

## Strategic Changes

	0	Strongly Disagree & Disagree	Neutral	Strongly Agree & Agree		Mean	Standard Deviation	Rank By Mean
SC1.During the pandemic, the strategy developed for the business changed with new information.	Count	12	10	69	91	3.73	0.895	3
	Row N %	13%	11%	76%	100.0%			
SC2.During the pandemic, the strategy developed for the business was limited by my business knowledge	Count	48	13	30	91	2.74	1.124	10
	Row N %	53%	14%	33%	100.0%			
SC3.During the pandemic, the strategy developed for the business was limited to the performance history of the firm.	Count	40	18	33	91	2.91	1.082	7
	Row N %	44%	20%	36%	100.0%			
SC4.I found it hard to decide on which strategic change was the most viable option to act upon	Count	45	15	31	91	2.76	1.205	9
	Row N %	49%	16%	34%	100.0%			
SC5.I was more willing to seek opportunities and accept a level of risk.	Count	9	7	75	91	3.91	0.812	1
	Row N %	10%	8%	82%	100.0%			
SC6.I considered options that provided only reduced risk levels.	Count	36	17	38	91	3.04	1.043	6
	Row N %	40%	19%	42%	100.0%			
SC7.I considered not taking any business action during the pandemic that was risky.	Count	43	15	33	91	2.86	1.207	8
	Row N %	47%	16%	36%	100.0%			
SC8.During the pandemic, I have decided the addition of numerous new products or services was required for survival	Count	15	13	63	91	3.73	1.096	3
	Row N %	16%	14%	69%	100.0%			
SC9.During the pandemic, I have decided to terminate original products and services that no longer generated the desired performance.	Count	45	16	30	91	2.81	1.237	8
	Row N %	49%	18%	33%	100.0%			
SC10.I have experienced during the pandemic, the time I have to make decisions was short and I had to act fast.	Count	11	8	72	91	3.87	0.98	2
	Row N %	12%	9%	79%	100.0%			
SC11.I have stayed committed to the action I had to take, even when I failed numerous, and things seemed hopeless	Count	17	16	58	91	3.6	1.031	4
	Row N %	19%	18%	64%	100.0%			
SC12.I have during the pandemic, made numerous decisions through the addition and termination of products or services been able to survive.	Count	19	17	55	91	3.48	1.026	5
	Row N %	21%	19%	60%	100.0%			
Pivoting -Strategic Changes	Count	340.00	165.00	587.00	1,092.00	2.9984	0.68063	

## Pivoting

		Strongly Disagree & Disagree	Neutral	Strongly Agree & Agree	Total	Mean	Standard Deviation	Rank By Mean
PH1.I have achieved sustainability through the continuous innovation of new ideas and product development.	Count	15	14	62	91	3.67	1.001	5
	Row N %	16%	15%	68%	100.0%			
PH2.I have created a new product or service offering as a replacement for existing offerings.	Count	22	18	51	91	3.37	1.082	6
	Row N %	24%	20%	56%	100.0%			
PH4.I have numerously amended the new offerings to adjust to customer preferences after receiving customer feedback.	Count	9	18	64	91	3.73	0.804	3
	Row N %	10%	20%	70%	100.0%			
PH6.I have changed the business model to adapt to the needs of the environment	Count	8	12	71	91	3.92	0.885	1
	Row N %	9%	13%	78%	100.0%			
PV4.I have relied on the marketing of the existing product or service to allow business continuation.	Count	18	9	64	91	3.68	1.053	4
	Row N %	20%	10%	70%	100.0%			
PV5.I have a strong passion for the product or service and through this passion, I choose to not have new products or services	Count	42	19	30	91	2.85	1.229	11
	Row N %	46%	21%	33%	100.0%			
PV6.I have a strong passion for the product or service and through this passion, I choose to not look for new markets to enter.	Count	49	15	27	91	2.66	1.276	15
	Row N %	54%	16%	30%	100.0%			
PV7.I believe preserving the original business idea during the pandemic is an optimal decision for survival.	Count	32	22	37	91	3.05	1.196	7
	Row N %	35%	24%	41%	100.0%			
SC2.During the pandemic, the strategy developed for the business was limited by my business knowledge	Count	48	13	30	91	2.74	1.124	14
	Row N %	53%	14%	33%	100.0%			
SC3.During the pandemic, the strategy developed for the business was limited to the performance history of the firm.	Count	40	18	33	91	2.91	1.082	9
	Row N %	44%	20%	36%	100.0%			
SC4.I found it hard to decide on which strategic change was the most viable option to act upon	Count	45	15	31	91	2.76	1.205	13
	Row N %	49%	16%	34%	100.0%			
SC6.I considered options that provided only reduced risk levels.	Count	36	17	38	91	3.04	1.043	8
	Row N %	40%	19%	42%	100.0%			
SC7.I considered not taking any business action during the pandemic that was risky.	Count	43	15	33	91	2.86	1.207	10
	Row N %	47%	16%	36%	100.0%			
SC9.During the pandemic, I have decided to terminate original products and services that no longer generated the desired performance.	Count	45	16	30	91	2.81	1.237	12
	Row N %	49%	18%	33%	100.0%			
SC10.I have experienced during the pandemic, the time I have to make decisions was short and I had to act fast.	Count	11	8	72	91	3.87	0.98	2
	Row N %	12%	9%	79%	100.0%			
Pivoting -Unidimensional constuct	Count	463.00	229.00	673.00	1,365.00	3.1949	0.49812	

## Covid-19 Impact on Female Entrepreneurs

		No	Yes	Total
E13.1.Closed business permanently	Count	85	6	91
	Row N %	93%	7%	100.0%
E13.2.Closed business temporarily	Count	61	30	91
	Row N %	67%	33%	100.0%
E13.3.Renegotiated vendor contracts	Count	69	22	91
	Row N %	76%	24%	100.0%
E13.4.Deferred loan payments and debt obligations	Count	73	18	91
	Row N %	80%	20%	100.0%
E13.5.Reduced staff employed	Count	64	27	91
	Row N %	70%	30%	100.0%
E13.6.Terminated building lease	Count	76	15	91
	Row N %	84%	16%	100.0%
E13.7.Postponed new product launches	Count	63	28	91
	Row N %	69%	31%	100.0%
E13.8.Postponed Research and Development projects	Count	75	16	91
	Row N %	82%	18%	100.0%
Covid Impact on Female Entrepreneurs	Count	566.00	162.00	728.00

## Number of Years in Business

Descriptives									
Number of Years in Business		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Entrepreneurial_Orientation	0-3 year	29	4.1379	0.43730	0.08120	3.9716	4.3043	3.00	4.88
	3-5 year	16	3.9375	0.41833	0.10458	3.7146	4.1604	3.13	4.75
	5-10 year	24	4.0000	0.51208	0.10453	3.7838	4.2162	2.75	4.75
	Longer than 10 years	22	4.0284	0.52742	0.11245	3.7946	4.2623	2.63	5.00
	Total	91	4.0398	0.47539	0.04983	3.9408	4.1388	2.63	5.00
Pivoting	0-3 year	29	3.1517	0.44326	0.08231	2.9831	3.3203	2.07	4.00
	3-5 year	16	3.2583	0.58670	0.14668	2.9457	3.5710	2.40	4.53
	5-10 year	24	3.1472	0.45725	0.09333	2.9541	3.3403	2.20	4.47
	Longer than 10 years	22	3.2576	0.56053	0.11951	3.0090	3.5061	2.47	5.00
	Total	91	3.1949	0.49812	0.05222	3.0911	3.2986	2.07	5.00
Horizontal_Pivoting	0-3 year	29	3.7241	0.55237	0.10257	3.5140	3.9342	2.25	5.00
	3-5 year	16	3.5938	0.74652	0.18663	3.1960	3.9915	2.00	5.00
	5-10 year	24	3.5104	0.72035	0.14704	3.2062	3.8146	2.00	4.75
	Longer than 10 years	22	3.8409	0.70096	0.14944	3.5301	4.1517	2.00	5.00
	Total	91	3.6731	0.67154	0.07040	3.5332	3.8129	2.00	5.00
Vertical_Pivoting	0-3 year	29	2.9569	0.77939	0.14473	2.6604	3.2534	1.25	4.25
	3-5 year	16	3.1250	0.98319	0.24580	2.6011	3.6489	1.50	5.00
	5-10 year	24	3.1042	0.76938	0.15705	2.7793	3.4290	1.00	4.00
	Longer than 10 years	22	3.1023	0.95947	0.20456	2.6769	3.5277	1.25	5.00
	Total	91	3.0604	0.84930	0.08903	2.8836	3.2373	1.00	5.00
Strategic_Change	0-3 year	29	2.9360	0.65419	0.12148	2.6871	3.1848	1.14	4.00
	3-5 year	16	3.1429	0.66189	0.16547	2.7902	3.4956	2.14	4.00
	5-10 year	24	2.9643	0.72016	0.14700	2.6602	3.2684	2.00	5.00
	Longer than 10 years	22	3.0130	0.71484	0.15240	2.6960	3.3299	1.86	5.00
	Total	91	2.9984	0.68063	0.07135	2.8567	3.1402	1.14	5.00

## Education Level

Education Level		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Entrepreneurial_Orientation	Secondary Education (High School)	16	4.2188	0.30448	0.07612	4.0565	4.3810	3.75	5.00
	Degree	22	3.9773	0.57817	0.12327	3.7209	4.2336	2.63	4.75
	Postgraduate	19	3.8882	0.35329	0.08105	3.7179	4.0584	3.25	4.38
	Master	8	4.4531	0.35316	0.12486	4.1579	4.7484	3.75	4.75
	Total	65	4.0692	0.46563	0.05775	3.9539	4.1846	2.63	5.00
	Model			0.43477	0.05393	3.9614	4.1771		
Pivoting	Secondary Education (High School)	16	3.4833	0.60345	0.15086	3.1618	3.8049	2.53	5.00
	Degree	22	3.3212	0.38249	0.08155	3.1516	3.4908	2.93	4.53
	Postgraduate	19	3.0035	0.40944	0.09393	2.8062	3.2009	2.20	3.80
	Master	8	3.2167	0.66643	0.23562	2.6595	3.7738	2.47	4.47
	Total	65	3.2554	0.51242	0.06356	3.1284	3.3824	2.20	5.00
	Model			0.49025	0.06081	3.1338	3.3770		
Horizontal_Pivoting	Secondary Education (High School)	16	4.1094	0.49133	0.12283	3.8476	4.3712	3.00	5.00
	Degree	22	3.7727	0.63109	0.13455	3.4929	4.0525	2.75	5.00
	Postgraduate	19	3.4079	0.67294	0.15438	3.0835	3.7322	2.00	4.25
	Master	8	4.0313	0.73724	0.26065	3.4149	4.6476	2.50	4.75
	Total	65	3.7808	0.67098	0.08322	3.6145	3.9470	2.00	5.00
	Model			0.62648	0.07770	3.6254	3.9361		
Vertical_Pivoting	Secondary Education (High School)	16	3.0938	1.00778	0.25195	2.5567	3.6308	1.25	5.00
	Degree	22	3.3409	0.79637	0.16979	2.9878	3.6940	1.00	5.00
	Postgraduate	19	2.8553	0.85113	0.19526	2.4450	3.2655	1.75	4.25
	Master	8	2.9688	0.81763	0.28908	2.2852	3.6523	1.25	4.00
	Total	65	3.0923	0.87340	0.10833	2.8759	3.3087	1.00	5.00
	Model			0.87095	0.10803	2.8763	3.3083		
Strategic_Change	Secondary Education (High School)	16	3.3482	0.68406	0.17102	2.9837	3.7127	2.43	5.00
	Degree	22	3.0519	0.50179	0.10698	2.8295	3.2744	2.14	4.00
	Postgraduate	19	2.8571	0.69661	0.15981	2.5214	3.1929	1.86	4.14
	Master	8	2.8929	1.06563	0.37676	2.0020	3.7837	1.86	5.00
	Total	65	3.0484	0.69952	0.08677	2.8750	3.2217	1.86	5.00
	Model			0.68939	0.08551	2.8774	3.2193		
					0.11221	2.6913	3.4054		

## Number of Business Held

Number of Business Held		N	Mean	Std. Deviation	Std. Error Mean
Entrepreneurial_Orientation	0-1	50	3.9725	0.50273	0.07110
	2-5	39	4.1122	0.43848	0.07021
Pivoting	0-1	50	3.1733	0.48017	0.06791
	2-5	39	3.2120	0.52513	0.08409
Horizontal_Pivoting	0-1	50	3.5850	0.65194	0.09220
	2-5	39	3.7500	0.68585	0.10982
Vertical_Pivoting	0-1	50	3.0450	0.78845	0.11150
	2-5	39	3.0641	0.94541	0.15139
Strategic_Change	0-1	50	3.0114	0.62958	0.08904
	2-5	39	2.9890	0.72945	0.11681

## Industry

Industry		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Entrepreneurial Orientation	Beauty, Cosmetics, Hair and Nails	10	4.3250	0.50415	0.15943	3.9644	4.6856	3.38	5.00
	Tourism and Hospitality	3	3.5417	0.79386	0.45833	1.5696	5.5137	2.63	4.00
	Event Planning, Catering and Restaurants	6	3.6042	0.54438	0.22224	3.0329	4.1755	3.00	4.38
	Technology sector	7	4.1429	0.22160	0.08376	3.9379	4.3478	3.75	4.50
	Consulting	13	3.9808	0.54210	0.15035	3.6532	4.3084	2.75	4.75
	Financial services	2	4.0625	0.08839	0.06250	3.2684	4.8566	4.00	4.13
	Retail	11	4.2841	0.34045	0.10265	4.0554	4.5128	3.75	4.88
	Manufacturing	7	4.0536	0.47246	0.17857	3.6166	4.4905	3.50	4.63
	Accounting	1	3.8750					3.88	3.88
	Agriculture	3	3.9167	0.14434	0.08333	3.5581	4.2752	3.75	4.00
	Architecture, Building and Construction	1	4.7500					4.75	4.75
	Cleaning services	1	4.5000					4.50	4.50
	Digital Marketing	3	3.8333	0.43899	0.25345	2.7428	4.9238	3.38	4.25
	Education	2	4.1875	0.08839	0.06250	3.3934	4.9816	4.13	4.25
	Health & wellness	6	3.8750	0.32596	0.13307	3.5329	4.2171	3.25	4.13
	Legal	1	3.7500					3.75	3.75
	Marketing & Graphic Design	6	4.2083	0.52241	0.21327	3.6601	4.7566	3.63	4.88
	Medical	3	4.1667	0.50518	0.29167	2.9117	5.4216	3.88	4.75
	Pet Service	2	3.7500	0.35355	0.25000	0.5734	6.9266	3.50	4.00
	Property Management	2	3.5000	0.53033	0.37500	-1.2648	8.2648	3.13	3.88
	Social Networking	1	3.7500					3.75	3.75
	Total	91	4.0398	0.47539	0.04983	3.9408	4.1388	2.63	5.00
	Model			0.45676	0.04788	3.9443	4.1353		
					0.06134	3.9119	4.1678		

Pivoting	Beauty, Cosmetics, Hair and Nails	10	3.5267	0.77965	0.24655	2.9689	4.0844	2.73	5.00
	Tourism and Hospitality	3	3.0222	0.10184	0.05879	2.7693	3.2752	2.93	3.13
	Event Planning, Catering and Restaurants	6	3.0556	0.16009	0.06536	2.8875	3.2236	2.80	3.20
	Technology sector	7	3.2000	0.47765	0.18053	2.7582	3.6418	2.53	4.07
	Consulting	13	3.3333	0.57478	0.15941	2.9860	3.6807	2.47	4.53
	Financial services	2	3.1333	0.18856	0.13333	1.4392	4.8275	3.00	3.27
	Retail	11	3.0848	0.44631	0.13457	2.7850	3.3847	2.27	3.73
	Manufacturing	7	3.0571	0.53807	0.20337	2.5595	3.5548	2.20	3.67
	Accounting	1	3.1333					3.13	3.13
	Agriculture	3	3.4000	0.35277	0.20367	2.5237	4.2763	3.13	3.80
	Architecture, Building and Construction	1	3.0000					3.00	3.00
	Cleaning services	1	3.6667					3.67	3.67
	Digital Marketing	3	3.0667	0.24037	0.13878	2.4696	3.6638	2.87	3.33
	Education	2	3.5000	0.70711	0.50000	-2.8531	9.8531	3.00	4.00
	Health & wellness	6	2.9000	0.37178	0.15178	2.5098	3.2902	2.40	3.27
	Legal	1	3.0667					3.07	3.07
	Marketing & Graphic Design	6	3.1111	0.69368	0.28319	2.3831	3.8391	2.07	4.00
	Medical	3	3.3111	0.30062	0.17356	2.5643	4.0579	3.00	3.60
	Pet Service	2	3.3333	0.18856	0.13333	1.6392	5.0275	3.20	3.47
	Property Management	2	3.0667	0.09428	0.06667	2.2196	3.9137	3.00	3.13
	Social Networking	1	2.6667					2.67	2.67
	Total	91	3.1949	0.49812	0.05222	3.0911	3.2986	2.07	5.00
	Model			0.51967	0.05448	3.0862	3.3035		

					.05448 <sup>a</sup>	3.0812 <sup>a</sup>	3.3085 <sup>a</sup>		
Horizontal_Pivoting	Beauty, Cosmetics, Hair and Nails	10	3.5750	0.84204	0.26628	2.9726	4.1774	2.50	5.00
	Tourism and Hospitality	3	3.0000	0.86603	0.50000	0.8487	5.1513	2.00	3.50
	Event Planning, Catering and Restaurants	6	3.1250	0.64711	0.26418	2.4459	3.8041	2.25	4.00
	Technology sector	7	4.0714	0.67259	0.25422	3.4494	4.6935	3.25	5.00
	Consulting	13	3.8077	0.55108	0.15284	3.4747	4.1407	2.75	5.00
	Financial services	2	3.8750	0.53033	0.37500	-0.8898	8.6398	3.50	4.25
	Retail	11	3.9091	0.53936	0.16262	3.5467	4.2714	3.00	4.75
	Manufacturing	7	3.5000	0.67700	0.25588	2.8739	4.1261	2.00	4.00
	Accounting	1	3.7500					3.75	3.75
	Agriculture	3	3.5833	0.52042	0.30046	2.2905	4.8761	3.00	4.00
	Architecture, Building and Construction	1	4.5000					4.50	4.50
	Cleaning services	1	5.0000					5.00	5.00
	Digital Marketing	3	3.2500	0.25000	0.14434	2.6290	3.8710	3.00	3.50
	Education	2	4.2500	0.35355	0.25000	1.0734	7.4266	4.00	4.50
	Health & wellness	6	3.6250	0.81777	0.33385	2.7668	4.4832	2.00	4.25
	Legal	1	3.5000					3.50	3.50
	Marketing & Graphic Design	6	3.2917	0.64064	0.26154	2.6194	3.9640	2.50	4.00
	Medical	3	3.9167	0.52042	0.30046	2.6239	5.2095	3.50	4.50
	Pet Service	2	4.0000	0.70711	0.50000	-2.3531	10.3531	3.50	4.50
	Property Management	2	3.2500	0.35355	0.25000	0.0734	6.4266	3.00	3.50
	Social Networking	1	4.0000					4.00	4.00
	Total	91	3.6731	0.67154	0.07040	3.5332	3.8129	2.00	5.00
	Model			0.65058	0.06820	3.5371	3.8091		

Vertical_Pivoting	Beauty, Cosmetics, Hair and Nails	10	3.7000	0.56273	0.17795	3.2974	4.1026	3.00	5.00
	Tourism and Hospitality	3	2.8333	0.28868	0.16667	2.1162	3.5504	2.50	3.00
	Event Planning, Catering and Restaurants	6	3.2917	0.74861	0.30562	2.5060	4.0773	2.00	4.00
	Technology sector	7	2.4643	1.11270	0.42056	1.4352	3.4934	1.00	4.25
	Consulting	13	3.1731	1.15192	0.31949	2.4770	3.8692	1.25	5.00
	Financial services	2	3.6250	0.88388	0.62500	-4.3164	11.5664	3.00	4.25
	Retail	11	2.5227	0.60678	0.18295	2.1151	2.9304	1.25	3.25
	Manufacturing	7	2.8214	0.53452	0.20203	2.3271	3.3158	2.00	3.75
	Accounting	1	3.5000					3.50	3.50
	Agriculture	3	3.5000	0.66144	0.38188	1.8569	5.1431	2.75	4.00
	Architecture, Building and Construction	1	3.0000					3.00	3.00
	Cleaning services	1	3.5000					3.50	3.50
	Digital Marketing	3	3.2500	0.86603	0.50000	1.0987	5.4013	2.25	3.75
	Education	2	3.2500	0.35355	0.25000	0.0734	6.4266	3.00	3.50
	Health & wellness	6	2.7500	0.72457	0.29580	1.9896	3.5104	1.75	3.75
	Legal	1	3.2500					3.25	3.25
	Marketing & Graphic Design	6	3.1667	1.22134	0.49861	1.8850	4.4484	1.50	4.25
	Medical	3	3.0000	0.50000	0.28868	1.7579	4.2421	2.50	3.50
	Pet Service	2	3.5000	0.70711	0.50000	-2.8531	9.8531	3.00	4.00
	Property Management	2	3.2500	1.06066	0.75000	-6.2797	12.7797	2.50	4.00
	Social Networking	1	2.0000					2.00	2.00
	Total	91	3.0604	0.84930	0.08903	2.8836	3.2373	1.00	5.00
	Model			0.84563	0.08865	2.8836	3.2372		

Strategic_Change	Beauty, Cosmetics, Hair and Nails	10	3.4000	1.05366	0.33320	2.6463	4.1537	2.14	5.00
	Tourism and Hospitality	3	3.1429	0.51508	0.29738	1.8633	4.4224	2.57	3.57
	Event Planning, Catering and Restaurants	6	2.8810	0.58146	0.23738	2.2707	3.4912	2.14	3.71
	Technology sector	7	3.1224	0.48395	0.18292	2.6749	3.5700	2.43	3.86
	Consulting	13	3.1538	0.52960	0.14689	2.8338	3.4739	2.29	4.00
	Financial services	2	2.4286	0.20203	0.14286	0.6134	4.2437	2.29	2.57
	Retail	11	2.9351	0.74056	0.22329	2.4376	3.4326	1.86	4.00
	Manufacturing	7	2.9388	0.75529	0.28547	2.2403	3.6373	2.00	4.00
	Accounting	1	2.5714					2.57	2.57
	Agriculture	3	3.2381	0.78680	0.45426	1.2836	5.1926	2.71	4.14
	Architecture, Building and Construction	1	2.1429					2.14	2.14
	Cleaning services	1	3.0000					3.00	3.00
	Digital Marketing	3	2.8571	0.42857	0.24744	1.7925	3.9218	2.43	3.29
	Education	2	3.2143	1.11117	0.78571	-6.7692	13.1977	2.43	4.00
	Health & wellness	6	2.5714	0.36140	0.14754	2.1922	2.9507	2.14	3.00
	Legal	1	2.7143					2.71	2.71
	Marketing & Graphic Design	6	2.9762	0.97485	0.39798	1.9531	3.9992	1.14	4.00
	Medical	3	3.1429	0.71429	0.41239	1.3685	4.9172	2.43	3.86
	Pet Service	2	2.8571	0.40406	0.28571	-0.7732	6.4875	2.57	3.14
	Property Management	2	2.8571	0.60609	0.42857	-2.5884	8.3027	2.43	3.29
	Social Networking	1	2.2857					2.29	2.29
	Total	91	2.9984	0.68063	0.07135	2.8567	3.1402	1.14	5.00
	Model			0.71442	0.07489	2.8491	3.1478		

## Appendix F: Regression Model and Moderation Model

Table 10: Linear Regression results of the proposed model

Model Summary								
Dependant variable	Predictors	Moderation Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.	Test
Pivoting	Entrepreneurial Orientation	Model 1	.266 <sup>a</sup>	0.071	0.060	0.48287	.011 <sup>b</sup>	Simple Regression ANOVA
Entrepreneurial Orientation	Pivoting	Model 2	.266 <sup>a</sup>	0.071	0.060	0.46084	.011 <sup>b</sup>	Simple Regression ANOVA

Table 11: Moderation Effects

Covid Impact on Female Entrepreneurs	Moderation Status		EO p-value	P p-value	CV p-value	Interaction p-value
CV1. Closed business permanently	Fail	Model 1	0.0165	0.0121	0.2127	0.2712
CV2. Closed business temporarily	Fail	Model 1	0.5385	0.159	0.871	0.692
CV3. Renegotiated vendor contracts	Fail	Model 1	0.0064	0.0505	0.4008	0.3677
CV4. Deferred loan payments and debt obligations	Fail	Model 1	0.157	0.0818	0.7935	0.7553
CV5. Reduced staff employed	Fail	Model 1	0.051	0.0175	0.9923	0.8277
CV6. Terminated building lease	Fail	Model 1	0.0845	0.363	0.365	0.2972
CV7. Postponed new product launches	Fail	Model 1	0.017	0.0826	0.6263	0.6155
CV8. Postponed Research and Development projects	Fail	Model 1	0.0148	0.0795	0.7949	0.7492
Covid Impact on Female Entrepreneurs	Moderation Status		EO p-value	P p-value	CV p-value	Interaction p-value
CV1. Closed business permanently	Fail	Model 2	0.0293	0.0166	0.2236	0.2685
CV2. Closed business temporarily	Success	Model 2	0.0082	0.564	0.022	0.0258
CV3. Renegotiated vendor contracts	Fail	Model 2	0.0348	0.0046	0.1942	0.2327
CV4. Deferred loan payments and debt obligations	Fail	Model 2	0.0908	0.0177	0.9333	0.9117
CV5. Reduced staff employed	Fail	Model 2	0.0915	0.0394	0.8791	0.8673
CV6. Terminated building lease	Success	Model 2	0.0141	0.0969	0.0511	0.0444
CV7. Postponed new product launches	Fail	Model 2	0.0924	0.0259	0.9154	0.9173
CV8. Postponed Research and Development projects	Fail	Model 2	0.0881	0.017	0.8881	0.9247

## Appendix G: End Notes for Research Questions

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<sup>i</sup> Research question 1: Aims to establish a relationship between EO (Innovativeness) in female entrepreneurs.

The relationship between female entrepreneurs and entrepreneur orientation through literature indicates a low level of innovation in female entrepreneurs. The vast research studies conducted amongst female entrepreneurs globally provide guidance into the relationship however, the relationship between South African female entrepreneurs and innovation remains unknown.

<sup>ii</sup> Research question 2: Aims to establish a relationship between EO (Innovativeness) and a pivot model of horizontal diversifications in female entrepreneurs.

The important factor for horizontal diversification as a pivoting model relates to the change in business models. Through the business model adjustment, the female entrepreneur was able to create new products or services. This research question is relevant for this research study by providing evidence into the incremental innovation adopted by the female entrepreneur during the pandemic.

<sup>iii</sup> Research question 3: Aims to establish a relationship between EO (Innovativeness) and a perseverance model of vertical diversifications in female entrepreneurs.

The relevance of this research question for the research study provides evidence towards whether a female entrepreneur that maintains the operational activities of the business was able to survive the pandemic. The risk averse level of female entrepreneurs indicate this model for success.

<sup>iv</sup> Research question 4: Aims to establish a relationship between EO Innovativeness and strategic change decisions for pivoting

The strategic changes represents a pivoting model through the adjustment of the business strategy to effect change for survival. The pandemic created a fast pace environment that required the female entrepreneur to make quick decisions that

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could potential help the business sustain during the pandemic.

√ Research question 5: Aims to investigate whether Covid impact mediates the relationship between EO innovation and pivoting

This research question is important for this research study because the understanding of how the impact of the Covid -19 has influenced the female entrepreneurs ability to use innovation to exploit opportunities. The opportunities recongnised is considered an essential factor for pivoting thus this research question aims to investigate the mediation effect of entrepreneurial orientation and pivoting.