



***Effects of risk tolerance in the effectuation and causation
process on growth of entrepreneurial firms***

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ABSTRACT

There is a critical need for entrepreneurial action to stimulate the economy, this study aimed to investigate how entrepreneurs make decisions, how they perceive financial risk and how their decision-making linked to their risk profile translates into their firms' financial growth. To do this study had to firstly, understand how entrepreneurs make decisions. Sarasvathy's (2001) seminal work in this field distinguished between entrepreneurs who follow an effectuation or a causation decision making process. Causation is compared to puzzle building where all the pieces are there, but needs to be assembled. Whereas effectuation is compared to patchwork quilting where the entrepreneur need to develop the opportunity while constantly changing direction as new information becomes available. The findings showed that causation logic is more common in terms of decision making with entrepreneurs, which is contrary to findings of Sarasvathy (2001). Secondly, this study set out to understand how entrepreneurs perceive financial risk by measuring their financial risk tolerance levels. This was measured independently for entrepreneurs following the effectuation as well as a causation approach. The results indicated that the majority of entrepreneurs were ranked in the moderate risk taking category according to the FinaMetrica model. Entrepreneurs who follow causation logic had a greater aptitude for risk than their counterparts who followed an effectuation approach. Thirdly, this study determined whether a statistically significant correlation existed between the decision-making approach, risk tolerance levels and the financial growth achieved by the entrepreneurial firm. This study did not find a statistically significant relationship between these constructs.

KEYWORDS

Effectuation, Causation, Decision-making process, Risk tolerance, Financial growth

DECLARATION

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

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1. Introduction

High unemployment is a worldwide occurrence. It is estimated that the labour force in the developing world is set to increase by 50 percent by 2050 and is set to double in sub-Saharan Africa (The Economist, 2011) and thus only worsening the problem of unemployment. A prominent question must then surely be how to create new jobs? Thurik, Carree, van Stel and Audretsch (2008) found a positive correlation between entrepreneurship and economic growth. According to the seminal work of Schumpeter (1934) economic development can be directly attributed to the level of entrepreneurial activity in a country. This is partially explained by the definition of Sharma and Chrisman (1999) who define entrepreneurship as “acts of organisational creation, renewal or innovation that occur within or outside an existing organisation” by entrepreneurial individuals.

High-growth start-ups are the best generators of new jobs according to Gilbert and Eyring (2010). These high-growth start-ups are also the firms most likely to raise productivity, which is a basis for economic growth and therefore job creation. Start-ups create jobs that did not previously exist and solve problems that people assumed were part of the natural order of things, but according to Gilbert and Eyring (2010) success only comes to those who are able to quickly identify and systematically eliminate risks. It is therefore of cardinal importance to understand how entrepreneurs make decisions in an uncertain environment. This knowledge will help develop entrepreneurship through better risk-

assessment training and ensure that nascent entrepreneurs have a higher success rate due to lower risk of the unknown. Sarasvathy (2001) proposed that entrepreneurs predominantly apply effectual logic to guide their decision-making. The effectuation process is defined by Goel and Karri (2006) as a decision-making process or rather a type of human reasoning that involves choosing between possible effects using a given set of means as oppose to causation that attempt to predict the outcome by evaluation all possible options. Further to this decision-making logic, one also needs to understand how entrepreneurs perceive risk and how this impacts entrepreneurial risk tolerance to be either the advantageous or disadvantageous to the entrepreneurial firm. This might just hold the key as to why entrepreneurs constantly switch between causation and effectuation. Sarasvathy (2001) explains that every situation is different to the next in the sense that the timing, information and risk differ thus influencing the decision-making process. According to Gilbert and Eyring (2010) entrepreneurs will never be able to eliminate all of the situational risks, because without risks their products or services would never get to the market. Gilbert and Eyring (2010, p. 1) also aver that the key question for entrepreneurs must be to ask; “What’s the most important uncertainty?”, once this is known this risk needs to be eliminated or mitigated.

1.2. Research Scope

From an explorative literature review the critical research approaches with regard to entrepreneurial risk taking will be consolidated, followed by an

empirical study which will assess the effect of the different levels of risk tolerance in the decision-making process on financial growth in small and medium-sized enterprises (SMEs). The South Africa population of SMEs are not known, but numbers are estimated to vary from one to three million (Smorfitt, 2011). The scope of the research assesses how decision-logic with specific reference to theory surrounding effectuation and causation impacts on the levels of risk tolerance in relation to the achieved financial growth of SMEs over the past three years.

1.3. Research Motivation

Hisrich and Peters (2002) professed that no conclusive causal relationships have empirically been determined regarding risk and the entrepreneur. In addition to this the arguments of Miner and Raju (2004) and Dreamer and Earle (2004) emphasize the need for empirical evidence regarding entrepreneurial risk tolerance. Thus, studying current entrepreneurial actions and behaviour will allow future entrepreneurs to assess patterns of behaviour that lead to competitive advantage through reduced risk. According to Sarasvathy (2001) the entrepreneur has three categories of “means” to their disposal, being that they know who they are, what they know and who they know. This translates into their ‘traits’, ‘knowledge and abilities’ as well as their networks which must be fully understood in its entirety in order to make sense of entrepreneurial behaviour.

Sarasvathy and Venkataraman (2011) stated that pre-scientific explanations of knowledge creation consisted in the notion that scientific ability was largely an inborn trait or an accident of birth and circumstance, and not a matter of systematic study or training. This strikes an interesting parallel to the traits contained in literature with respect to entrepreneurship. Entrepreneurial studies began by trying to describe entrepreneurs in terms of their traits (McClelland, 1961) and also by trying to isolate what makes entrepreneurs different from non-entrepreneurs (Brockhaus, 1982; Woo, Cooper, & Dunkelberg, 1991).

Kuratko and Hodgetts (2007), as referenced by Morris, Kuratko and Covin (2008), identified 16 common traits and characteristics associated with the entrepreneurial individual: drive to achieve, internal locus of control, calculated risk taking, tolerance of ambiguity, commitment, independence, self-confidence and optimism, tolerance of failure, persistent problem solving, opportunity orientation, integrity and reliability, high energy levels, resourcefulness, creativity and innovativeness, vision and team building. These traits or characteristics forms the bases that drives the entrepreneurial orientation (EO) which refers to the processes, practices, and decision-making activities used by entrepreneurs (Covin & Slevin, 1991). In an environment of rapid change and shortened product and business model lifecycles, the future profit streams from existing operations are uncertain and businesses need to constantly seek new opportunities. Therefore, firms may benefit from adopting an EO (Rauch, Wiklund, Lumpkin, & Frese, 2009). Such firms innovate frequently while taking

risks in their product-market strategies (Miller & Friesen, 1982). Efforts to anticipate demand and aggressively position new product or service offerings often result in strong performance (Ireland, Hitt, & Sirmon, 2003). Risk-taking is a critical component within EO, especially associated with decision-making. A study by Stewart and Roth (2001) found that entrepreneurs do indeed exhibit higher risk tolerance than non-entrepreneurial managers. Goel and Karri (2006, p. 479) relates the ability to trust to risk: “a decision to trust is also constantly a decision to accept the vulnerability and the risk of loss if the possible expectations of another prove to be misplaced”. Entrepreneurs need to trust others and need to serve as trustees in order to establish and grow their firm (Goel & Karri, 2006). The entrepreneur will constantly expose him-/herself to vulnerability and risk.

Furthermore, Goel and Karri (2006) argue that entrepreneurs use certain selection criteria that stem from the affordable loss principle of the effectuation process to assume trust in their business partners. The affordable loss principle involves decision makers, estimating what they might be able to put at risk and determining what they are willing to lose in order to follow a course of action (Dew, Sarasvathy, Read, & Wiltbank, 2009). Rauch et al. (2009) states that it is likely that risk taking implied by entrepreneurial orientation might also lead to higher chances of failure. By definition, risk is associated with greater outcome variance and is thus an important variable to investigate and gain a deeper understanding in order to understand whether a higher level of risk tolerance lead to higher growth among entrepreneurial firms.

The research is set out to determine to what extent levels of risk tolerance impacts the effectuation and causation decision-making logic. It will further explore how these decisions (made based on the perceived risk and evaluated against the entrepreneurs' own risk tolerance) impact on financial growth of a firm.

1.4. Summary

The current turmoil that the world economy has been facing linked with the extensive disparities that exist between developed economies and third world economies necessitate a need for entrepreneurial action. It is therefore up to entrepreneurs to create new ventures that have the ability to grow in order facilitate job creation. This study will therefore aim to research entrepreneurial decision-making, their tolerance for financial risk taking and how these components contribute to the financial growth of entrepreneurial firms.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter provides an overview of the literature used in support of the hypotheses. In addition, this literature review will serve as the basis for the discussion and interpretation of the results of this study and will also signify that a need did indeed exist for this particular research. The literature review sets out by examining entrepreneurship in its broadest sense. Following on this, the researcher leans on the seminal work of astute researchers such as Sarasvathy (2001) and Chandler, DeTienne, McKelvie and Mumford (2009) to highlight how entrepreneurs make decisions. This is then linked to entrepreneurial risk taking through literature reviews on the topic of risk taking as a characteristic of entrepreneurs and risk taking as a trait of entrepreneurial orientation before the researcher reviews some of the literature on entrepreneurial risk tolerance as compared to that of non-entrepreneurs. Lastly a brief review is presented on the characteristics of a growth- oriented firm as the research is aimed to explore the correlation between these constructs.

2.2. Entrepreneurship

Although there are different views on the definition of entrepreneurship, two lines of research agree on a broad definition of entrepreneurship seen as a process concerned with the discovery and exploitation of profitable opportunities (Shane & Venkataraman, 2000). This definition labels entrepreneurship as a comprehensive process which, on the macro level has to

be seen as increased production or increased efficiency. The four dimensions of the definition of entrepreneurship, namely discovery, exploitation, profit and opportunity are inextricably interwoven and their joint presence is required (Dembinski, 2006).

From current literature, for example Dembinski (2006), it appears that the understanding of entrepreneurship is far from satisfactory, one of the reasons being the highly scattered nature of research from both methodological and epistemic points of view. Modern research in entrepreneurship has found two different, but somewhat matching strands. The first one concerns pure economic theory and builds mostly on the Austrian school, as opposed to the general equilibrium school (Kirzner, 1997). This is also theory related and looks at the place and role of the entrepreneur as an energy source which brings life into the market economy, which is seen as a system. The second one is more practical and above all empirical, and aims at identifying components of entrepreneurial success (Dembinski, 2006). Although hundreds of perspectives have been presented, seven of the most prevalent themes are summarised in Table 1.

Table 1: Seven Perspectives on the Nature of Entrepreneurship

Creation of wealth	Entrepreneurship involves assuming the risks associated with facilitation of production in exchange for profit.
Creation of enterprise	Entrepreneurship entails the founding of a new venture where none existed before.
Creation of innovation	Entrepreneurship is concerned with unique combinations of resources that make existing methods or products obsolete.
Creation of change	Entrepreneurship involves creating change, adjusting, adapting, and modifying one's personal repertoire, approaches, and skills to meet different opportunities available in the environment.
Creation of employment	Entrepreneurship is concerned with employing, managing, and developing the factors of production, including the labour force.
Creation of value	Entrepreneurship is the process of creating value for customers by exploiting untapped opportunities.
Creation of growth	Entrepreneurship is defined as a strong and positive orientation towards growth in sales, income, assets and employment.

Source: Morris, M. (1998). Entrepreneurial Intensity. Westport, CT: Quorum Books.

Entrepreneurship is thus "...a way of thinking, reasoning and acting that is opportunity obsessed, holistic in approach, and leadership balanced" (Herrington, Kew, & Kew, 2009, p. 12). To be able to exploit opportunities in the pursuit of growth the entrepreneur must make sound decisions that will minimise risk while maximising returns. Rust (2010) found that most entrepreneurs apply a variety of decision-making logic and that very few entrepreneurs constantly apply either only effectuation or causation logic.

2.3. Decision-making According to Effectuation and Causation Logic

Chandler et al. (2009) professed that Sarasvathy (2001) contributed to the understanding of the entrepreneurial process by describing two distinct processes to new venture creation: causation and effectuation. Sarasvathy (2008) uses the following contrasting metaphors to explain the two concepts. Firstly, Sarasvathy (2008) refers to a jigsaw puzzle to depict causation and secondly, to patchwork quilting to capture the essence of effectuation to highlight the differences between the two approaches. Sarasvathy (2008) then explained that in the jigsaw puzzle approach (causation), the entrepreneur's task is to take an existing market opportunity and, through the use of resources, create a sustainable competitive advantage. The assembler of jigsaw puzzles sees the world as one in which all of the pieces are there, but must be assembled. In the patchwork quilt approach (effectuation), the task of the entrepreneur is to develop the opportunity by experimenting and changing direction as new information becomes available. The patchwork quilter sees the world as still in-the-making with a significant role for human action (Chandler *et al.*, 2009). Chandler et al. (2009) continued the study of effectuation and in turn proposed that effectuation is a multi-dimensional formative construct, composed of three independent sub-dimensions (experimentation, affordable loss and flexibility) and one sub-dimension (pre-commitments) which is the only dimension that is shared with causation. Rust (2010) found that very few entrepreneurs follow a pure causation or a pure effectuation process; instead they tend to adopt a combination of the two processes.

Sarasvathy, Dew, Ramakrishna and Venkataraman (2005) professes that the rational decision-making processes that use a causal approach, rely on the logic of prediction, as opposed to an effectual approach that relies on the logic of control. In other words, effectual reasoning does not necessarily adopt a systematic acquisition and analysis of information within certain bounds. It is rather based on the assumption that, given what one knows one can control the future, thereby eliminating the need to predict the future. The effectual approach to decision-making is especially relevant in entrepreneurial settings where uncertainty is a reality. In general, markets seem to be non-existent and opportunities are not merely recognised, but must be created (Sarasvathy, *et al.*, 2005). The effectuation process is a choice whereby the entrepreneur chooses between many possible effects, using a particular set of means (Sarasvathy, 2001). The three main dimensions of the effectuation process, as defined by Chandler *et al.* (2009), are affordable loss, experimentation and flexibility and will be discussed in the following section.

2.3.1. Affordable Loss

Goel and Karri (2006) argue that entrepreneurial traits interact with the elements of the effectuation process to make entrepreneurs more susceptible to over-trust. Further to this entrepreneurs recognise the set of means that they are gifted with and, given their situational characteristics, entrepreneurs use certain selection criteria that principally stem from the affordable loss principle and assume trust in their partners. The affordable loss principle also involves

decision-makers, estimating what they might be able to put at risk and determining what they are willing to lose in order to follow a course of action (Dew *et al.*, 2009). Goel and Karri (2006) also aver that this means that entrepreneurs do not necessarily evaluate the risk of their relationships using a causal approach. They continue to state that affordable losses may be considered the cost of doing business, and occasional failures as positive signs of entrepreneurial qualities.

2.3.2. Experimentation

According to Goel and Karri (2006) empirical studies conclude that entrepreneurs are significantly different from managers in their preference for innovation. Managers are typically inclined towards actions that are efficient, rather than creative. Experimentation and creativity feed the entrepreneurial drive and make entrepreneurs hypersensitive to opportunity recognition.

2.3.3. Flexibility

Sarasvathy (2001) argues that entrepreneurs that follow the effectuation process in general, tend to remain more flexible since the structure of the emerging organisation is dependent on various opportunities and the particular investments made by the stakeholders. “Thus the need for prediction is greatly reduced” (Sarasvathy, 2001, p. 252). The literature has viewed flexibility as one of the advantages that start-up firms have over the established firm. March and

Simon (1958) was quoted by Sarasvathy (2008) as saying that as firms mature and grow, they must implement policies, procedures, and routines, whereas entrepreneurs (and especially those following an effectuation process) maintain the flexibility necessary to change, and move to other better possibilities.

To summarise, the effectuation process is a decision-making logic that assume a given set of means from which various outcomes are possible. This is in contrast with causation where an individual makes a rational choice based on all the available information that may affect his decision (Chandler *et al.*, 2009). The path that the entrepreneur chooses to pursue in achieving his goal will be influenced by his/ her own characteristics and levels of risk tolerance. Chandler *et al.* (2009) states that knowledge of the behaviour and actions of entrepreneurs are critical to understanding the entrepreneurial economy.

2.4. Risk Taking as an Entrepreneurial Characteristic

What would life be if we had no courage to attempt anything?

- Vincent van Gogh

As the risk level of a new venture goes down, the value goes up (Gilbert & Eyring, 2010). According to Morris *et al.* (2008) entrepreneurs are more motivated by achievement than power, money, status, acceptance or any other

motivators. Further to this, entrepreneurs are driven by the task, the challenge; the opportunity to accomplish what others said could not, would not or should not be done. Morris et al. (2008, pp. 145-147) then state that the common traits and more specifically the characteristics associated with entrepreneurs form the bases that drive entrepreneurial orientation (EO). Moreover, EO refers to the combination of processes, practices, and decision-making activities used by entrepreneurs (Covin & Slevin, 1991).

2.5. Risk Taking as a Dimension of Entrepreneurial Orientation

In the history of research into Entrepreneurial Orientation (EO) Rauch et al. (2009) referred to Mintzberg (1973) who first found that EO has its roots in the strategy-making process literature. Strategy-making is an organisation-wide phenomenon that incorporates planning, analysis, decision-making, and many aspects of an organisation's culture, value system, and mission (Hart, 1992). This was also consistent with an earlier study of Mintzberg, Raisinghani and Theoret (1976) who noted that strategy-making is “important, in terms of the actions taken, the resources committed, or the precedents set” (p. 246). EO represents the policies and practices that provide a basis for entrepreneurial decisions and actions. Thus, EO may be viewed as the entrepreneurial strategy-making processes that key decision-makers use to enact their firm's organisational purpose, sustain its vision, and create competitive advantage(s).

The critical dimensions of EO can be derived from a review and integration of the strategy and entrepreneurship literatures (Covin & Slevin, 1991; Miller, 1983; Miller & Friesen, 1978; Venkatraman, 1989). Based on Miller's conceptualisation, three dimensions of EO have been identified and are used consistently in the literature: innovativeness, risk taking, and proactiveness. *Innovativeness* is the predisposition to engage in creativity and experimentation through the introduction of new products or services, as well as technological leadership via research and development in new processes (Rauch *et al.*, 2009). *Risk taking* involves taking bold actions by venturing into the unknown, borrowing heavily, and/or committing significant resources to ventures in uncertain environments (Rauch *et al.*, 2009). *Proactiveness* is an opportunity-seeking, forward-looking perspective characterised by the introduction of new products and services ahead of the competition and acting in anticipation of future demand (Rauch *et al.*, 2009).

EO encompasses all the aspects discussed earlier, the entrepreneur, his/her characteristics, and the decision-making process (effectuation). It also goes further than pure decision-making that might vary from situation to situation (Rust, 2010) to encompass the setting of policies and practices that drive the very essence of the firm's tolerance with respect to risk. As defined under EO risk taking refers to an action, but more important than the action itself is the entrepreneur's tolerance to risk as this is ultimately what allows the

entrepreneur to accept or reject the risk thus inadvertently influencing the taking or avoiding of a certain action.

2.6. Entrepreneurial Risk Tolerance

Boldly accepting too much risk might lead to failure, similarly being completely risk averse might lead to procrastination (zero firm growth) and ultimately also to failure. Entrepreneurs need to understand the different types of risk and must be able to assess the impact of accepting or avoiding these risks. Janney and Dess (2006) profess that using the wrong risk measurements will likely lead to invalid conclusions. Specifically, an action may appear risky to an established firm; however, in an entrepreneurial context, it might actually prove less so. An entrepreneur who accepts such risks will appear to be accepting greater levels of risk relative to their more established counterparts, even though the entrepreneur does not perceive this as a greater risk (Janney & Dess, 2006). Existing risk measurements may then fail to capture the actual risk entrepreneurs' face.

Risk, in its simplest form, is a function of the variation in the distribution of possible outcomes, the associated outcome's likelihoods and their subjective values (Xu & Ruef, 2004). Casson (1990, p. 11) more specifically describes entrepreneurial risk as the result of insecurity that exists due to the fact that the success of market penetration can never really be determined beforehand. The

correct prediction of the question by the entrepreneur would therefore be an indication of success in the form of a decrease in risk. Risk can be described as the possibility of innovation having an unwanted result. Zimmerer and Scarborough (1996, p. 48) regard risk as the “conflict situation wherein the entrepreneur will find him-/herself”. In their opportunity evaluation model, Zimmerer and Scarborough (1996, p. 51) describe the following risks that an entrepreneur may encounter:

- ✓ **Time risk:** “This risk entails the time implication of taking a new idea through the product development phase until it could be considered right for the market.”
- ✓ **Investment risk:** “This includes the cost of the establishment of a new venture, in other words, does the entrepreneur have access to enough capital to enable the venture to survive to the point of being an entrepreneurial institute? Other costs are those related to the total product development process, as well as those concerned with the physical manufacturing of the total product that will, for instance, satisfy the qualitative description.”
- ✓ **Technical risk:** “All the technical aspects associated with the product development process are considered, and the final product has to satisfy the set technical quality standards.”
- ✓ **Competitive risk:** “The possibility exists that competitors could be offering the same or comparable products in the market, while the success rate of competitors in comparable markets is also an indication of risk. The financial

strength and depth of a competitor should not be omitted, as a ‘follower’ strategy by the competitor could pose further risk. The existing market advantage of a competitor, as well as its existing distribution system, selling power and established relationships within the market place, must be researched.”

Once the entrepreneur knows of the various types of risk, it becomes imperative to understand how this risk is perceived or measured as this will influence the overall risk tolerance of the entrepreneur. So why do perceptions of risk differ? Janney and Dess (2006) focus on three issues that address this question. First, the term risk contains multiple meanings, many of which employ measurements appropriate for a particular context of risk, being unable to provide general measurements for all contexts. Janney and Dess (2006) continue to state that the polysemic concern can be observed as three primary themes of actual risk emerge: *risk as variance*, *risk as downside loss*, and *risk as opportunity-driven*. Janney and Dess (2006) aver that risk as downside loss should take into account a loss of opportunity as well, and that this concern is often not present in traditional measures of risk.

Second, Janney and Dess (2006) draw upon insight from Shane and Venkataraman (2000), who suggest that entrepreneurs who identify an opportunity sooner, appear to accept greater amounts of risk because others

lack the knowledge to properly understand the opportunity. Therefore, asymmetry in knowledge will lead to differing perceptions of risk regarding a given decision. The need to attract resources and protect knowledge differs for entrepreneurs and managers, creating different risks for each. Finally, Janney and Dess (2006) believe that many of the resources that entrepreneurs rely upon are not adequately emphasised in the risk literature, specifically resources such as social capital.

Up to this point this study touched on entrepreneurship, entrepreneurs, their characteristics, decision-making logic and how the entrepreneur's aptitude for risk influences all actions taken by entrepreneur. The last construct of this study focuses on growth as an entrepreneurial goal and the motivation for ultimately accepting any risk.

2.7. Characteristics of Growth Oriented Firms

The empirical literature reports a high diversity of performance indicators (cf. reviews by Combs, Crook, & Shook, 2005; Venkatraman & Ramanujam, 1986); a common distinction is between financial and non-financial measures. Non-financial measures include goals such as satisfaction and global success ratings made by owners or business managers; financial measures include assessments of factors such as sales growth and return on investments. Regarding financial performance, there is often a low convergence between

different indicators (Murphy, Trailer, & Hill, 1996). On a conceptual level, one can distinguish between growth measures and measures of profitability. While these concepts are empirically and theoretically related, there are also important differences between them (Rauch *et al.*, 2009). This study will aim to measure the firm's financial growth by assessing the level of growth achieved in year-on-year sales. This will be determined through the following formula.

$$\text{Actual Growth} = \frac{\text{Current Year Sales} - \text{Prior Year Sales}}{\text{Prior Year Sales}}$$

2.8. Summary

Entrepreneurship consists of many components of which one is the exploitation of opportunities. To be able to exploit opportunities in the pursuit of growth the entrepreneur must make sound decisions that will minimise risk while maximising returns. The key focus of this chapter was to explore the decision-making logic followed by entrepreneurs and how the entrepreneur's aptitude for risk influences all actions taken by entrepreneur. The literature review indicated that the path that the entrepreneur chooses to pursue in achieving his goal will be influenced by his/ her own characteristics and levels of risk tolerance.

The literature review also explored growth as an entrepreneurial goal and the motivation for ultimately accepting any risk. From the literature review it can be concluded that it is imperative for an entrepreneur to understand the various

types of risks and how they are perceived or measured as these influence the overall risk tolerance of the entrepreneur. This will ultimately influence the growth of the entrepreneurial firm.

CHAPTER 3: RESEARCH HYPOTHESES

3.1. Introduction

The hypotheses were formulated based on the literature review. The literature review has indicated that the levels of risk tolerance could influence the possible growth opportunities of the entrepreneurial firm. The hypotheses will investigate the relationship between decision-making logic, levels of risk tolerance and financial growth. This research specifically aims to test the following four hypotheses:

3.2. Hypothesis One

Null hypothesis: H_{01} = Entrepreneurs that apply effectuation as decision-logic are more likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic.

Alternate hypothesis: H_{11} = Entrepreneurs that apply effectuation as decision-logic are not likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic.

3.3. Hypothesis Two

Null hypothesis: H_{02} = Entrepreneurs that apply effectuation as decision-logic are more likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic.

Alternate hypothesis: H_{12} = Entrepreneurs that apply effectuation as decision-logic are not likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic.

3.4. Hypothesis Three

Null hypothesis: H_{03} = There is a relationship between risk tolerance and financial growth for effectuation decision-making logic.

Alternate hypothesis: H_{13} = There is no relationship between risk tolerance and financial growth for effectuation decision-making logic.

3.5. Hypothesis Four

Null hypothesis: H_{04} = There is a relationship between risk tolerance and financial growth for causation decision-making logic.

Alternate hypothesis: H_{14} = There is no relationship between risk tolerance and financial growth for causation decision-making logic.

3.6. Summary

This study will test the four hypotheses listed above. The first hypothesis will enable the researcher to conclude whether either of the decision processes accept higher levels of financial risk than the other. The second hypothesis tests the likelihood of either of the decision processes having higher financial growth levels than the other decision process. Lastly the third and fourth hypotheses set out to determine whether a statistically significant correlation exists in terms of risk tolerance and financial growth for either of the decision-making processes. The results of this study were documented in chapter 5 where after the discussion was conducted in chapter 6 before that final conclusion was drawn in chapter 7.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. Introduction

This chapter provides an overview of the research setting as well as explains the rationale for the chosen research methodology. The strengths and weaknesses of the chosen methodology are also highlighted. Thereafter the unit of analysis, sampling method, data gathering process and data analysis are discussed. This research distinguishes between entrepreneurs following the effectuation and causation decision-making logic. Rust (2010, p. ii) described the difference between these two processes in that “...*causation approaches a problem with the end in mind while effectuation’s point of departure is its means. Causal logic predicts a best case future scenario and then gathers the necessary resources to realise that scenario. This is contrasted to effectual logic that attempts to control the future by making use of resources in hand while trying to achieve the best possible result*”. In addition, this study also measured how various levels of risk tolerance, of the entrepreneurs following either effectual or causation decision-making logic, impacts on the financial growth of a firm.

4.2. Research Design and Methodology

The research design was a quantitative, descriptive study. Quantitative research rely more on quantitative information, i.e. numbers and figures (Blumberg, Cooper, & Schindler, 2008). Descriptive statistics aim to summarise a data set, rather than use the data to learn about the population that the data

are thought to represent. This means that descriptive statistics, unlike inferential statistics, are not developed on the basis of probability theory (Dodge, 2003). According to Mack, Woodsong, MacQueen, Guest and Namey (2010) quantitative research may be conducted to:

- ✓ verify hypotheses about a phenomena;
- ✓ quantify the variation;
- ✓ predict causal relationships; and
- ✓ describe characteristics of a population

Quantitative research was chosen for this study because this study investigates the relationship between multiple variables. The variables are the type of decision-logic, the level of risk-taking and the financial growth of the firm. Both the decision-logic and the level of risk-taking are independent variables while the financial growth is a dependent variable. Neuman (2011, p. 161) states that "... the independent variable is 'independent of' prior causes and the dependent variable 'depends on' the cause".

A survey method is defined by Blumberg et al. (2008) as a chosen communication approach. The survey method used in this study was a structured, self-administered questionnaire. This research method was chosen based on the following benefits as discussed by Blumberg et al. (2008):

- ✓ Costs – these surveys typically cost less than personal interviews.
- ✓ Sample accessibility – researchers can contact participants that might otherwise have been out of reach.

- ✓ Anonymity – as surveys are generally perceived as more impersonal they generally provide greater anonymity to the participants compared to other methods.

The questionnaire (Appendix 1 – Questionnaire) consisted of three sections. Section one of the questionnaire contains questions regarding effectuation obtained from an adopted version of the ‘Panel Study for Entrepreneurial Dynamics II’ (PSED II) questionnaire. The PSED II questionnaire used was the adopted version created by Rust (2010).

Section two of the questionnaire relies on psychometric testing and relates to the risk tolerance of entrepreneurs. The questions were adopted from a risk assessment questionnaire used in the financial industry by FinaMetrica (Pty) Ltd. The purpose was to measure the risk tolerance levels of the business owner/s or management, within the context of their firms, when decisions are made. This enabled the researcher to determine the acceptable financial level of risk tolerance for the entrepreneur. The FinaMetrica's psychometric test was specifically chosen due to the fact that it focuses on the psychological factors relevant to financial decisions. Furthermore the questionnaire consisted of question-and-answer discussions about the respondent's attitudes, values, preferences and experiences in matters involving financial risk. Each respondent was asked to answer each statement by choosing the appropriate

answer. The answers were then fed into the FinaMetrica website in order to calculate a risk tolerance score for each question. The scores were totalled which indicated the respondents overall attitude towards risk tolerance.

The third section of the questionnaire measured the growth of the enterprise and contained financial growth measures. Financial growth was measured in terms of percentage growth based on year-on-year revenue figures. Three years of revenue figures were requested from which growth was calculated. This study used a cross sectional time frame. The ultimate purpose of this questionnaire was to gather the necessary information which would then enable the researcher to test the hypotheses listed in chapter three.

Pilot testing of the questionnaire was done prior to the distribution of the questionnaires. Owners and owner managers from ten firms were included in the self-administered pilot. The aim of the pilot was to address any gaps in the questionnaire and to gauge whether business owners understood all the questions. Furthermore the feedback aimed to ensure that the results were received in a clear and consistent manner. Lastly the feedback was used to make final changes to the questionnaire before the distribution to potential respondents.

4.2.1. Reliability and Validity

It is submitted that the questionnaire used in this study is both valid and reliable. Validity according to Neuman (2011) refers to how well an idea fits with actual reality and whether one can draw meaningful inferences from scores. Both the decision-logic questionnaire as well as the financial risk tolerance questionnaire was stated to be valid by their respective sources, but no scores were provided. Additionally a reliability analysis was performed for both sections of the questionnaire. The decision-logic questionnaire yielded a Cronbach Alpha coefficient of 0.743 (Rust, 2010). A reliability coefficient of .70 or higher is usually considered "acceptable" (University of California). The financial risk tolerance questionnaire was assessed by the University of New South Wales and the following findings are published on the FinaMetrica webpage. The risk tolerance questionnaire uses psychometrics which is a blend of psychology and statistics which is the science of psychological testing (FinaMetrica Pty Limited, 2011). It is an established discipline which provides standards for test construction and against which tests can be evaluated for validity and reliability (FinaMetrica Pty Limited, 2011). The University of New South Wales' Applied Psychology Unit confirms that FinaMetrica's risk tolerance test meets or exceeds the internationally accepted standards for a psychometric tool of this kind (FinaMetrica Pty Limited, 2011), but the final scores were not available.

4.3. Unit of Analysis and Population

The unit of analysis for this research was the South African small and medium-sized enterprises (SME) defined as per the National Small Business Amendment Act of South Africa, 2003 (No. 25763), refer to Appendix 2 - National Small Business Amendment Act of South Africa, 2003.

Albright, Winston and Zappe (2009, p. 34) define a population as: “all of the entities of interest in a study.” The population for this study was owner-managers of SMEs, who follow effectuation decision-making process as their predominant decision-logic. Further to this the population included all nine industries in South Africa to ensure that the results were not skewed by only focussing on one industry. It is estimated that there is approximately one to three million SME’s in South Africa (Smorfitt, 2011).

4.4. Sampling Method and Size

Albright et al. (2009, p. 34) defined a sample as: “a subset of the population” and states that the sample should preferably be representative of the population. Sampling is a critical component of research and the incorrect sample will influence the research design, measurement of variables and the data collection strategy (Neuman, 2011). The sampling size was approximately 1720 SME’s with an email response rate of approximately 5-6%, which equates to 103 responses.

A non-probability sampling approach was used. Non-probability sampling was used because it is more cost effective and less time consuming than probability sampling (Neuman, 2011). The weakness of a non-probability sample is that the probability of selecting population elements is unknown (Blumberg *et al.*, 2008). A combination of two non-probability sampling techniques was used, namely convenience and snowball although the study initially set out to use a database. The main reasons for choosing these two techniques were:

- The only reliable database of SMEs that the researcher could find was priced at R10 000. The database contained 5000 names of national entrepreneurial firms however the database owner was not willing to guarantee a specific response rate within the required timeframe. Secondly there was no assurance as to the currency of this database?
- The convenience sample method was easy and cost effective to conduct (Neuman, 2011). The convenience sample method assisted with easier access to firms.
- The initial set of questionnaires was distributed to friends and colleagues throughout South Africa. Each respondent was then asked to distribute the questionnaire to other entrepreneurs within their own social networks. Therefore although the primary distribution method was based on convenience, additional respondents were reached through snowball sampling.

4.5. Data Gathering Process

The data for this study was gathered via an internet online survey as well as an email questionnaire. Each of the potential respondents was contacted via e-mail containing a cover letter addressed to the owners explaining the purpose of the study. The questionnaires as well as the link were also distributed to the respondents via a personalised email. Two reminders were sent to the potential respondents. After eliminating 32 non-valid and incomplete responses, 70 usable responses were used in the analysis.

SurveyMonkey, an online tool, was used to design and distribute the questionnaire. It enabled the author to reach a larger proportion of businesses quickly while ensuring anonymity for the respondents. Although the respondents were invited to take part, no name or identification was requested during the completion of the questionnaire. Collection of data in this form was appropriate and convenient for this study for the following reasons:

- ✓ An Internet survey is very fast, inexpensive and flexible in terms of design (Neuman, 2011);
- ✓ Time constraints are overcome because this option ensures a rapid turnaround time; and
- ✓ This option can potentially reach more respondents by expanding geographical coverage without increase in costs.

Internet surveys do have a low response rate, however, follow-up phone calls as well as email reminders were sent to the potential respondents. The survey remained open for one month and an automated response was used to inform respondents that the survey has been terminated.

4.5.1. Research Instrument

The correlation between decision-logic, risk tolerance and financial growth was measured through a self-administered questionnaire consisting of three core sections. The first section determined the entrepreneur's preference towards either causal or effectual decision-logic. It consisted of eight questions with three options each. The second section of the questionnaire, which measures the level of risk tolerance, consisted of 12 questions using a seven point Likert-type scale. A Likert-type scale is the most frequently used variation of the summated rating scale (Blumberg *et al.*, 2008). These summated scales consist of statements that express either a favourable or unfavourable attitude towards the object of interest where participants are asked to agree or disagree with particular statements (Blumberg *et al.*, 2008). Each respondent was asked to rate each statement on a seven point scale, ranging from strongly agrees (1) to strongly disagree (7). The scores were totalled which indicated the respondents overall attitude towards risk tolerance.

The third section gathered actual revenue data of the firm for the last three years which were used to calculate the financial growth of the firm.

4.6. Data Analysis

The data analysis approach consisted of three steps. The first step was to ensure that the data was captured in the correct format. The data was processed through SPSS, during the second step. The last step consisted of the statistical analysis of the data using SPSS. Descriptive and inference statistics were used to analyse the data (Babbie, 1992).

4.6.1. Descriptive Statistics

Descriptive statistics is "... a medium for describing data in manageable forms" (Babbie, 1992, p. 430). Frequency analysis was used to describe the sample in terms of the demographics asked in the questionnaire. Descriptive statistics presented within this study included the number of participants, minimum and maximum scores, mean scores, mean ranked scores and standard deviations. The mean score is used to describe central tendency. The mean score is computed by adding up all the applicable values and dividing it by the number of cases (Web Center for Social Research Methods, 2011). These descriptive statistics provides an indication of the nature of the data on all variables measured.

4.6.2. Inferential Statistics

Inferential statistics assists in drawing conclusions from the observations; in other words it depicts conclusions about a population based on the sample

(Babbie, 1992). The inferential statistics were used to determine whether statistically significant differences existed between risk tolerance and financial growth for effectuation and causation decision-making logic. The following inferential statistical analysis was performed to do the analysis:

- ✓ **T-tests for independent samples:** The t-test assesses the statistical significance of the difference between two independent sample means. (Hair, Black, Babin, Anderson, & Tatham, 1998). This method was used to determine whether there were significant differences in the mean scores of effectuation versus causation decision-making logic in terms of risk tolerance and financial growth. Statistically significant relationships between variables are indicated by a significance value p . If the value of p is equal to or less than 0.05, it gives an indication that there is a statistically significant difference, on the 5% level of significance. Non-parametric statistics were used to confirm the results of the t-tests by making use of Mann-Whitney U-tests, because the sample size was small. This test is a distribution-free alternative to the independent samples t-test. *“The Mann-Whitney tests the null hypothesis that two independent samples come from the same population. Rather than being based on parameters of a normal distribution like mean and variance, Mann-Whitney statistics are based on ranks. The Mann-Whitney statistic is obtained by counting the number of times an observation from the group with the smaller sample size precedes an observation from the*

larger group. It is especially sensitive to population differences in central tendency” (Howell, 1992, p. 611).

- ✓ The rejection of the null hypothesis is generally interpreted to denote that the two distributions had different central tendencies, in other words, that there is a significant difference between the two groups on a specific variable measured. This test was used to determine significant differences between effectuation and causation decision-making logic on risk tolerance and financial growth. Non-parametric tests reports on mean rank scores.
- ✓ **Pearson product-moment correlations:** These tests indicate whether a significant correlation exists between one or more variables and also indicates the direction of this relationship as well as the strength (Myers & Well, 2003). This type of analysis was used to determine whether there were any relationships between risk tolerance and financial growth in each of the two decision-making logic groups (effectuation and causation). *“The Pearson product-moment correlation coefficient, r , is easily the most frequently used measure of association and the basis of many multivariate calculations. Pearson r is independent on scale of measurement (because both X and Y scores are converted to standard scores) and independent of sample size (because of division of $N-1$). The value of r ranges between $+1.00$ and -1.00 where values close to 0.00 represents no relationship or predictability between X and Y variables” (Tabachnick & Fidell, 1996, pp. 54-55).* Due to the small

sample size, Spearman's rank correlation (Spearman's rho) (non-parametric version of Pearson) was used to confirm these results.

4.7. Research Limitations

During the study various limitations have been identified:

- ✓ Only South African based firms were sampled, therefore it is not possible to determine the representative nature of this study in terms of similar entrepreneurial ventures in emerging economies.
- ✓ Lack of a comprehensive up-to-date database of South African SMEs prohibited probability sampling.
- ✓ The use of a web-based survey has certain limitations. Internet surveys have a low response rate and the researcher has limited control on quality of the respondents.
- ✓ Only financial risk tolerance was measured in this study due to time and financial constraints.
- ✓ Assessing overall risk tolerance instead of only financial risk might deliver more meaningful findings.
- ✓ Assessing financial success based on return on equity (ROE) might prove to provide more meaningful information, but this was not done as it might bring additional questions such as the owners accounting into the equation and thus diluting the visible link between financial risk and financial growth.

4.8. Summary

This study investigated the relationship between multiple variables (decision-making logic, risk tolerance levels and financial growth). Therefore, this research design was a quantitative, descriptive study. The survey method used in this study was a structured, self-administered questionnaire. The questionnaire was sent to South African based small and medium sized firms. A combination of two non-probability sampling techniques was used, namely convenience and snowball. The data was gathered via an internet online survey tool (SurveyMonkey) as well as an email questionnaire. Each potential respondent received an email containing a cover letter, the link to SurveyMonkey and a questionnaire attached to the email.

The data analyses were done using descriptive as well as inferential statistics. Descriptive statistics presented within this study included the number of participants, minimum and maximum scores, mean scores, mean ranked scores and standard deviations. The inferential statistics used in this study were the following: T-tests for independent samples, Mann-Whitney U-tests and the Pearson product-moment correlations tests. This study presented itself with various limitations, namely only South African based firms were sampled, low response rates from chosen web-based survey tool, only the financial risk tolerance was measured. Chapter five will report on the findings based on the research methodology used.

CHAPTER 5: RESULTS

5.1. Introduction

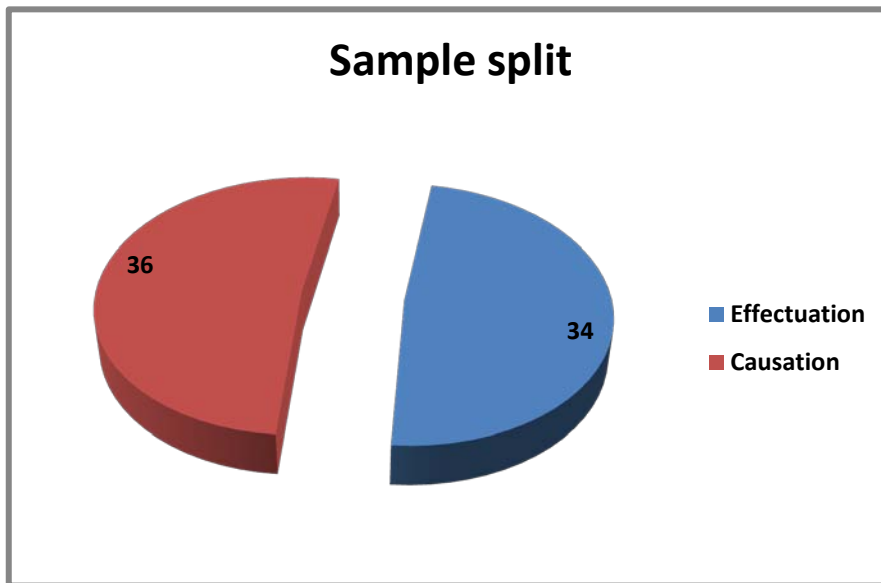
This chapter consists of the results of this study, presented in the following order:

- ✓ Description of the sample;
- ✓ Results of the analysis to determine whether risk tolerance scores differed between SME's using effectuation versus causation decision-making logic;
- ✓ Results of the correlation analyses to test whether there was any relationship between risk tolerance and financial growth over a 3-year period for effectuation and causation decision-making logic; and
- ✓ Results of the analysis to determine whether financial growth differed between SME's using effectuation versus causation decision-making logic.

5.2. Description of the Sample

The sample of 70 respondents were split between causation and effectuation with 48.6% for respondents who predominantly follow effectuation logic and 51.4% of the respondents that predominantly follow causation logic as shown in Figure 1.

Figure 1: Effectuation / Causation Split of Respondents



The following section will give a description of the sample in terms of the background of the respondents as well as the demographics of the firms who participated in the survey. The sample consisted of 70 SME's in total.

Table 2 indicates that most of the respondents are male (70%) while 30% of the sample was made-up by females. The table further indicates that males also represent the majority of respondents in both the effectuation (58.8%) and causation (80.6%) groups.

Table 2: Distribution by Gender of the Respondents

Decision-logic	Gender	Frequency	Percent	Valid Percent
Effectuation	Male	20	58.8%	58.8%
	Female	14	41.2%	41.2%
	Total	34	100.0%	100.0%
Causation	Male	29	80.6%	80.6%
	Female	7	19.4%	19.4%
	Total	36	100.0%	100.0%

The results in Table 3 indicate that the majority of the respondents (85.7%) are over the age of 35. This also applies for the two groups with respondents over 35 years of age being 82.4% in the effectuation group and 88.9% in the causation groups.

Table 3: Distribution by Age of the Respondents

Decision-logic	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	25-29	2	5.9%	5.9%	5.9%
	30-34	4	11.8%	11.8%	17.6%
	35+	28	82.4%	82.4%	100.0%
	Total	34	100.0%	100.0%	
Causation	25-29	1	2.8%	2.8%	2.8%
	30-34	3	8.3%	8.3%	11.1%
	35+	32	88.9%	88.9%	100.0%
	Total	36	100.0%	100.0%	

The results in Table 4 show that the majority of respondents in this sample is White (85.7%). This is also the case in both the Effectuation (88.2%) and Causation (83.3%) groups. The composition is due to the fact that the sample

was compiled through convenience and snowballing, which in turn results in the researcher not having any control over the sample's demographics.

Table 4: Distribution by Race of the Respondent

Decision-logic	Race	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	Black	2	5.9%	5.9%	5.9%
	Coloured	0	0.0%	0.0%	5.9%
	Indian	2	5.9%	5.9%	11.8%
	White	30	88.2%	88.2%	100.0%
	Other	0	0.0%	0.0%	100.0%
	Total		34	100.0%	100.0%
Causation	Black	2	5.6%	5.6%	5.6%
	Coloured	2	5.6%	5.6%	11.1%
	Indian	1	2.8%	2.8%	13.9%
	White	30	83.3%	83.3%	97.2%
	Other	1	2.8%	2.8%	100.0%
	Total		36	100.0%	100.0%

Results in Table 5 indicate that half of the respondents of the effectuation group completed a University degree or higher qualification. Close to a third (29.4%) completed a trade or diploma qualification, 17.6% completed high school, and a further 2.9% did not complete high school. These results show that almost 70% of the respondents have a tertiary education.

In the causation group, 41.7% completed a University degree or higher qualification and a third (33.3%) completed a trade or diploma qualification. A

further quarter (25.0%) of respondents in the causation group completed high school. This means that almost 75% of the causation respondents have a tertiary education.

Table 5: Distribution by Highest Level of Education of the Respondent

Decision-logic	Level of education obtained	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	Did not complete high school	1	2.9%	2.9%	2.9%
	Completed high school	6	17.6%	17.6%	20.6%
	Trade or diploma qualification	10	29.4%	29.4%	50.0%
	University degree or higher	17	50.0%	50.0%	100.0%
	Total	34	100.0%	100.0%	
Causation	Did not complete high school	0	0.0%	0.0%	0.0%
	Completed high school	9	25.0%	25.0%	25.0%
	Trade or diploma qualification	12	33.3%	33.3%	58.3%
	University degree or higher	15	41.7%	41.7%	100.0%
	Total	36	100.0%	100.0%	

Results in Table 6 indicate that 64.7% of the respondents in the effectuation group have a personal before-tax income of less than R500 000 with 20.6% having an income between R500 000 and R999 999. A further 8.8% have an income between R1 000 000 and R2 999 999 with 5.9% having an income of R3 000 000 and over. In the causation group, 58.3% of respondents indicated that they have a personal before-tax income of less than R500 000 with 25.0% having an income between R500 000 and R999 999. A further 13.9% have an

income between R1 000 000 and R2 999 999 with 2.8% having an income of R3 000 000 and over.

Table 6: Distribution by Personal Before-tax Income Bracket

Decision-logic	Personal before-tax income (R '000)	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	Under R100'	4	11.8%	11.8%	11.8%
	R100' to R249'	5	14.7%	14.7%	26.5%
	R250' to R499'	13	38.2%	38.2%	64.7%
	R500' to R999'	7	20.6%	20.6%	85.3%
	R1 000' to R2 999'	3	8.8%	8.8%	94.1%
	R3 000' or over	2	5.9%	5.9%	100.0%
	Total		34	100.0%	100.0%
Causation	Under R100'	3	8.3%	8.3%	8.3%
	R100' to R249'	8	22.2%	22.2%	30.6%
	R250' to R499'	10	27.8%	27.8%	58.3%
	R500' to R999'	9	25.0%	25.0%	83.3%
	R1 000' to R2 999'	5	13.9%	13.9%	97.2%
	R3 000' or over	1	2.8%	2.8%	100.0%
	Total		36	100.0%	100.0%

Results in Table 7 indicate that nearly half of the respondents in both the effectuation (47.1%) and causation (47.2%) groups were owners of the firm, with 14.7% of the respondents in the effectuation group indicating that they are partners of the firm, compared to the 13.9% in the causation group. A further 8.8% in the effectuation group indicated that they were a shareholder compared to the 19.4% in the causation group. The 'Other' group include part-owners that operate as strategic decision makers within the business. These part-owners

only have a small ownership in the business. The researcher was therefore concerned that their decision processes might differ from that of the owners. To address this concern the results were assessed including and excluding the responses of the respondents from the ‘Other’ group. The results were also assessed without these responses, but this exclusion did not alter the results.

Table 7: Distribution by Respondent’s Position in the Firm

Decision-logic	Position in firm	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	Owner	16	47.1%	47.1%	47.1%
	Partner	5	14.7%	14.7%	61.8%
	Shareholder	3	8.8%	8.8%	70.6%
	Other	10	29.4%	29.4%	100.0%
	Total	34	100.0%	100.0%	
Causation	Owner	17	47.2%	47.2%	47.2%
	Partner	5	13.9%	13.9%	61.1%
	Shareholder	7	19.4%	19.4%	80.6%
	Other	7	19.4%	19.4%	100.0%
	Total	36	100.0%	100.0%	

Approximately a third (29.4%) of firms in the effectuation group operates in the business services industry (Figure 2), with 17.6% in the construction, 11.8% in wholesale, and 8.8% each in the retail, telecommunications and financial services industry. More than a third (36.1%) of the firms in the causation group operates in the telecommunications industry, with 16.7% in the transport

industry and 11.1% each in the construction, business services and financial services industries.

Figure 2: Distribution by Industry in which the Company Operate

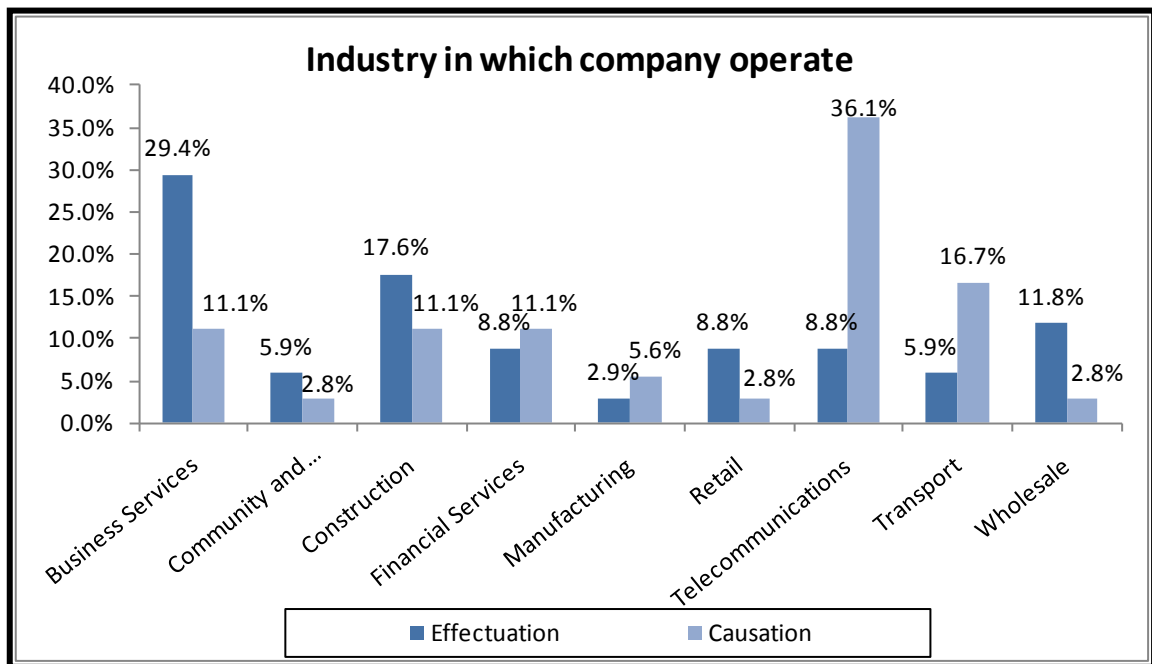


Table 8 shows the split of when the firms were founded. The grouping of the years was chosen based on five year groupings centred around the turn of the century. The results indicate that around a third of the firms in the effectuation group was founded before 2000 (32.4%), between 2000 and 2004 (32.4%) and between 2005 and 2009 (35.3%). In the causation group, 33.3% of the firms were founded before 2000, 16.7% between 2000 and 2004, 36.1% between 2005 and 2009, and 13.9% between 2010 and 2011.

Table 8: Distribution by Date of Founding the Firm

Decision-logic	Founding date of the firm	Frequency	Percent	Valid Percent	Cumulative Percent
Effectuation	Before 2000	11	32.4%	32.4%	32.4%
	2000 to 2004	11	32.4%	32.4%	64.7%
	2005 to 2009	12	35.3%	35.3%	100.0%
	2010 to 2011	0	0.0%	0.0%	100.0%
	Total	34	100.0%	100.0%	
Causation	Before 2000	12	33.3%	33.3%	33.3%
	2000 to 2004	6	16.7%	16.7%	50.0%
	2005 to 2009	13	36.1%	36.1%	86.1%
	2010 to 2011	5	13.9%	13.9%	100.0%
	Total	36	100.0%	100.0%	

5.3. Risk Profiling of the Effectuation and the Causation Group

The results in Table 9 show that the respondents in the causation group are heavily skewed towards the groups that denote higher risk taking. Only 2.8% of the respondents are below average risk takers while 30.6% are average risk takers. It is interesting to note that 66.7% of the total causation respondents fall into groups that denote above average risk tolerance. The effectuation group also show a skewed tendency towards the higher risk profiles, but it is not as drastic as that of the causation group. Of the effectuation group 20.5% of the respondents showed below average risk tolerance, 23.5% had average risk tolerance and 55.9% had above average levels of risk tolerance.

Table 9: Distribution of the Risk Profile

Risk group	1	2	3	4	5	6	7
Score range	Low	Moderate low	Average	Moderate high	High		
Causation	0.0%	0.0%	2.8%	30.6%	30.6%	22.2%	13.9%
Effectuation	0.0%	2.9%	17.6%	23.5%	41.2%	5.9%	8.8%

5.4. Comparison of Risk Tolerance and Financial Growth between Effectuation and Causation Groups

In this section the following two hypotheses are tested:

✓ **Hypothesis One**

Null hypothesis: H_{01} = Entrepreneurs that apply effectuation as decision-logic are more likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic

Alternate hypothesis: H_{11} = Entrepreneurs that apply effectuation as decision-logic are not likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic

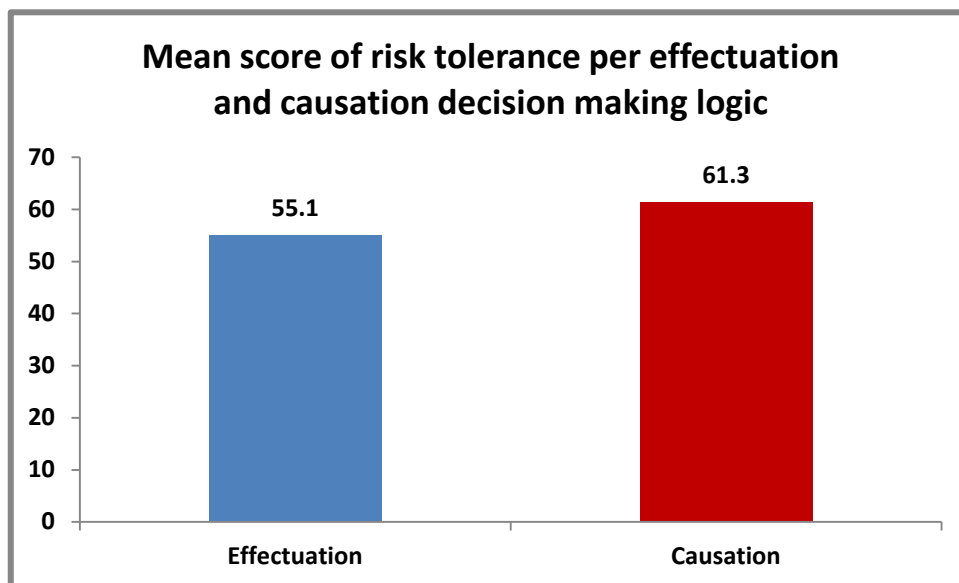
✓ **Hypothesis Two**

Null hypothesis: H_{02} = Entrepreneurs that apply effectuation as decision-logic are more likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic.

Alternate hypothesis: H_{12} = Entrepreneurs that apply effectuation as decision-logic are not likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic.

T-tests for independent samples were used to investigate whether statistically significant differences exist between the effectuation and causation group on risk tolerance scores as well as financial growth. Non-parametric statistics (Mann-Whitney U-tests) were used to confirm these results (refer 4.6.2). The results of this analysis are presented in Figure 3.

Figure 3: Mean Scores of Risk Tolerance



Results from the independent samples T-test show that statistically significant differences exist at the 5% level of significance between the risk tolerance

scores of the effectuation and the causation decision-logic groups (Table 10). The causation decision-logic group has on average a higher risk tolerance score (mean score of 61.3) than the effectuation decision-logic group (mean score of 55.1). This result was confirmed by the Mann-Whitney U-tests (Table 11).

Table 10: T-Tests to Determine Significant Differences in Risk Tolerance Scores

Group Statistics					
	Decision-logic	N	Mean	Std. Deviation	Std. Error Mean
Risk score	Effectuation	34	55.06	12.053	2.067
	Causation	36	61.33	10.215	1.702

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Lower	Upper
Risk score	Equal variances assumed	.041	.84	-2.35	68	.021	-6.28	2.67	-11.59	-.96
	Equal variances not assumed			-2.34	64.83	.022	-6.28	2.68	-11.62	-.93

Table 11: Non-parametric Tests; Mann-Whitney U-tests to Determine Differences in Risk Tolerance

Ranks

	Decision-logic	N	Mean Rank	Sum of Ranks
Risk score	Effectuation	34	30.29	1030.00
	Causation	36	40.42	1455.00
	Total	70		

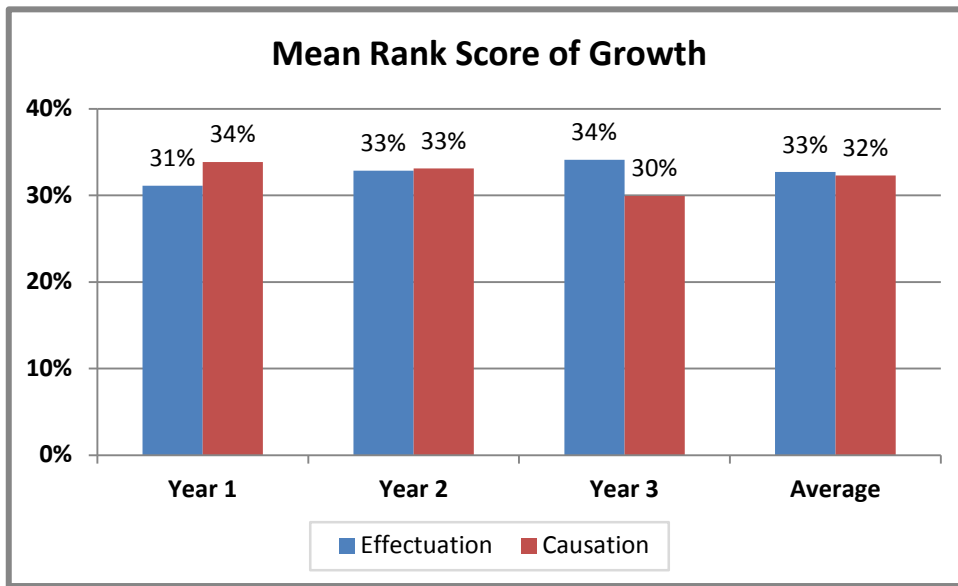
Test Statistics^a

	Risk score
Mann-Whitney U	435.000
Wilcoxon W	1030.000
Z	-2.081
Asymp. Sig. (2-tailed)	.037

a. Grouping Variable: Decision-logic

Therefore, a decision regarding the first hypothesis cannot be made as it states the opposite of the findings, namely that 'Entrepreneurs that apply effectuation as decision-logic is more likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic'.

Figure 4: Mean Rank Scores of Financial Growth



The years that were tested refer to the three last financial years of the entrepreneurs' businesses with the exception of five firms (which were only founded in 2010) included in the causation group. These five firms had only two years of data. All the other firms were assessed on their last three years financials which was either '2008 to 2010' or '2009 to 2011' depending on the business' financial year end. The mean rank scores of the growth variables were similar in all years when comparing effectuation versus causation decision-logic groups with the difference between the groups never reaching five percent. Non-parametric Mann-Whitney U-tests indicated that the year one financial growth, year two financial growth, year three financial growth and the average financial growth over the three year period did not differ statistically significantly when comparing the effectuation and causation decision-logic groups.

5.5. Relationship between Risk Tolerance and Financial Growth for Effectuation and Causation Groups

In this section hypothesis three and four are tested:

✓ *Hypothesis Three*

Null hypothesis: H_{03} = There is a relationship between risk tolerance and financial growth for effectuation decision-making logic.

Alternate hypothesis: H_{13} = There is no relationship between risk tolerance and financial growth for effectuation decision-making logic.

✓ *Hypothesis Four*

Null hypothesis: H_{04} = There is a relationship between risk tolerance and financial growth for causation decision-making logic.

Alternate hypothesis: H_{14} = There is no relationship between risk tolerance and financial growth for causation decision-making logic.

In order to determine whether there were statistically significant relationships between risk tolerance scores and financial growth, Pearson product-moment correlations were calculated. The results of this analysis for the two decision-logic groups are provided in separate tables, Table 12 and Table 13. The risk tolerance score was regrouped into seven groups (Table 9) which were used for correlation analysis purposes.

Only one statistically significant correlation was found between the banded risk tolerance score and financial growth (see Table 12). A low positive correlation ($r=0.312$; $p= 0.082$) at the 10% level of significance was found between the risk tolerance score in the effectuation group and financial growth in Year 2. Thus, the higher the risk tolerance scores, the higher the percentage in financial growth in Year 2. The relationship between these variables was however, weak and not confirmed in other years.

Table 12: Pearson Product-Moment Correlations between Risk Tolerance Scores and Financial Growth for the Effectuation Decision-logic Group

Correlations^a

		Risk Score Banded	Company's % change in year-on-year revenue Year 1	Company's % change in year-on-year revenue Year 2	Company's % change in year-on-year revenue Year 3
Risk Score Banded	Pearson Correlation	1	.083	.312	.279
	Sig. (2-tailed)		.650	.082	.129
	N	34	32	32	31
Company's % change in year-on-year revenue Year 1	Pearson Correlation	.083	1	.375*	.308
	Sig. (2-tailed)	.650		.038	.098
	N	32	32	31	30
Company's % change in year-on-year revenue Year 2	Pearson Correlation	.312	.375*	1	.637**
	Sig. (2-tailed)	.082	.038		.000
	N	32	31	32	31
Company's % change in year-on-year revenue Year 3	Pearson Correlation	.279	.308	.637**	1
	Sig. (2-tailed)	.129	.098	.000	
	N	31	30	31	31

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

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

a. Decision-logic = Effectuation

The results in Table 13 indicate that there was no statistically significant relationship found between the risk tolerance score and the financial growth for the causation decision-logic group.

Table 13: Pearson Product-Moment Correlations between Risk Tolerance Scores and Financial Growth for the Causation Decision-logic Group

Correlations^a

		Risk Score Banded	Company's percentage change in year-on-year revenue Year 1	Company's percentage change in year-on-year revenue Year 2	Company's percentage change in year-on-year revenue Year 3
Risk Score Banded	Pearson Correlation	1	-.116	-.156	-.153
	Sig. (2-tailed)		.528	.386	.403
	N	36	32	33	32
Company's percentage change in year-on-year revenue Year 1	Pearson Correlation	-.116	1	.766**	.484**
	Sig. (2-tailed)	.528		.000	.006
	N	32	32	32	31
Company's percentage change in year-on-year revenue Year 2	Pearson Correlation	-.156	.766**	1	.366*
	Sig. (2-tailed)	.386	.000		.039
	N	33	32	33	32
Company's percentage change in year-on-year revenue Year 3	Pearson Correlation	-.153	.484**	.366*	1
	Sig. (2-tailed)	.403	.006	.039	
	N	32	31	32	32

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

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

a. Decision-logic = Causation

An average financial growth was calculated using the Year 1 to Year 3 growth percentages and correlation analysis was run again to determine whether a

statistically significant relationship exist between the risk tolerance and financial growth.

Results in Table 14 indicate that no statistically significant relationship at the 5% or 10% level of significance could be found between the risk tolerance and the average three year financial growth. This holds true for both the effectuation and the causation decision-logic groups.

Table 14: Pearson Product-Moment Correlations between Risk Tolerance Scores and 3 Year Average Financial Growth

Correlations^a

		Risk Score Banded	Average 3 Year Growth
Risk Score Banded	Pearson Correlation	1	.215
	Sig. (2-tailed)		.254
	N	34	30
Average 3 Year Growth	Pearson Correlation	.215	1
	Sig. (2-tailed)	.254	
	N	30	30

a. Decision-logic = **Effectuation**

Correlations^a

		Risk Score Banded	Average 3 Year Growth
Risk Score Banded	Pearson Correlation	1	-.294
	Sig. (2-tailed)		.109
	N	36	31
Average 3 Year Growth	Pearson Correlation	-.294	1
	Sig. (2-tailed)	.109	
	N	31	31

a. Decision-logic = **Causation**

Based on these results both hypothesis three and hypothesis four was not supported.

5.6. Summary

The sample of this survey consisted of 70 South African based small and medium-sized enterprises (SMEs). The sample was split into two decision-making logic groups, effectuation (34 respondents) and causation (36 respondents). The majority of respondents were males, 35 years and older with a tertiary education. More than half of the respondents have a personal before-tax income of less than R 500 000. Approximately a third of the firms in the effectuation group was founded before 2000 (32.4%), between 2000 and 2004 (32.4%) and between 2005 and 2009 (35.3%). In the causation group, 33.3% of the firms were founded before 2000, 16.7% between 2000 and 2004, 36.1% between 2005 and 2009, and 13.9% between 2010 and 2011.

The results of the independent sample t-test indicated that statistically significant differences exist at the 5% level of significance between the risk scores of the effectuation and causation decision-making logic groups. The correlation analyses indicated that there were not any relationship between risk tolerance and financial growth over a three year period for the effectuation or the causation decision-making logic groups. The Pearson product-moment correlation test indicated that there was only one statistically significant correlation found between the risk tolerance score and financial growth for year

2 within the effectuation group. Chapter 6 will discuss these results in more details.

CHAPTER 6: DISCUSSION OF RESULTS

6.1. Introduction

This chapter discusses the findings of the data in light of the literature review and research hypotheses. The information captured in the questionnaire provided a set of data which provides insight into the hypotheses discussion in this chapter. The purpose of this study was to determine whether entrepreneurs who follow an effectuation decision-making process have a higher propensity for risk taking than entrepreneurs who follow a causation decision-making process. In addition, the researcher tested to determine if the type of decision process being either effectuation or causation linked to the entrepreneurs level of risk tolerance showed any correlation with the financial growth achieved within the firm.

6.2. Demographic Profile of Respondents

The sample of this survey consisted of 70 South African based small and medium-sized enterprises (SMEs). The sample was split into two decision-making logic groups, effectuation (34 respondents) and causation (36 respondents). The majority of respondents in both the effectuation (58.8%) and causation (80.6%) groups were males. 47.1% of the respondents were business owners with the remainder of the responders being part owners of varying nature. The majority of respondents (85.7%) were 35 years and older. The results indicated that 77% of the respondents have a tertiary education. More

than half of the respondents in both groups indicated that they have a personal before-tax income of less than R 500 000.

Approximately a third (29.4%) of firms in the effectuation group operates in the business services industry, with 17.6% in the construction and 8.8% each in the retail, telecommunications and financial services industry. Over a third (36.1%) of the firms in the causation group operates in the telecommunications industry, with 16.7% in the transport and 11.1% each in the construction, business services and financial services industries.

Approximately a third of the firms in the effectuation group was founded before 2000 (32.4%), between 2000 and 2004 (32.4%) and between 2005 and 2009 (35.3%). In the causation group, 33.3% of the firms were founded before 2000, 16.7% between 2000 and 2004, 36.1% between 2005 and 2009, and 13.9% between 2010 and 2011.

6.3. Hypotheses Testing

The four hypothesis defined in chapter 3 were tested and a summary of the findings appear In Table 15.

Table 15: Summary of Results

Nr	Alternative Hypotheses	Analytical Model	Support
H ₁	Entrepreneurs that apply effectuation as decision-logic are more likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic	T-Test, Mann-Whitney U-test	No
H ₂	Entrepreneurs that apply effectuation as decision-logic are more likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic	T-Test	No
H ₃	There is a relationship between risk tolerance and financial growth for effectuation decision-making logic	Pearson Product Moment correlations	No
H ₄	There is a relationship between risk tolerance and financial growth for causation decision-making logic	Pearson Product-moment correlations	No

6.4. Themes/Findings from the Data

Some important themes emerged from the data.

- ✓ In particular this study found a significant split between effectuation and causation with most entrepreneurs following a predominantly causation process (Figure 1). This is in contrast with the theory in which Sarasvathy (2001) proposed that entrepreneurs predominantly apply effectual logic to guide their decision-making.
- ✓ Risk tolerance levels between entrepreneurs that follow effectuation or causation decision-logic is statistically significantly different between the groups (Table 10 & Table 11) although both groups still show a moderate high level of risk tolerance according to the FinaMetrica profiling system

(Table 9). This tendency towards moderate risk tolerance is supported by theory from Goel and Karri (2006) as referenced earlier who aver that entrepreneurs are not in favour of high risk. Instead they evaluate each opportunity and then decide what they are willing to risk in the process of seizing the opportunity. Goel and Karri (2006) refer to the affordable loss principle where they explain that the entrepreneur does not see this as risk, but that this is rather seen as the cost of doing business.

- ✓ The last major finding was that the financial growth as achieved by entrepreneurs who follow effectuation or causation decision-logic is similar (Figure 4). The financial growth was measured over a three year period with no significant statistical difference being found.

6.5. Conclusion of Hypothesis One

Entrepreneurs that apply effectuation as decision-logic are more likely to have higher risk tolerance levels than entrepreneurs that apply causation decision-logic

Hypothesis one was not supported. A statistically significant difference at the 5% level of significance was found between the risk tolerance scores of the effectuation and the causation decision-logic groups that showed the contrary. The results indicated that statistically significant differences were found between the effectuation and causation decision-logic groups. The causation decision-logic group has on average a higher risk tolerance score than the

effectuation decision-logic group, which is the opposite of what is stated in the hypothesis.

Xu and Ruef (2004) aver that risk in its simplest form, is a function of the variation in the distribution of possible outcomes, the associated outcome's likelihoods and their subjective values. This is also confirmed in the theory where Sarasvathy (2001) proposed that the causation process deals with uncertainty by focusing on predictable aspects of an uncertain future. The logic behind this is that the entrepreneur believes that the extent to which they can predict the future, they can control it. Although by focussing on the end goal which may be impacted by numerous events that may occur at random along the way the entrepreneur will have to accept higher levels of risk. Sarasvathy (2001) then states that entrepreneurs that follow the effectuation process manage uncertainty by focusing on controllable aspects of an unpredictable future. They therefore do not attempt to know the future as the logic is that to the extent that they can control the future, they do not need to predict it. Therefore these entrepreneurs choose to best apply whatever resources are at hand to create the best possible future constantly adapting as they move along and in doing so lowering the levels of risk they need to accept. The entrepreneurs that follow causation logic might be forced to accept a higher level of risk as their final objective or goal is less flexible than that of the entrepreneurs that follow effectuation logic.

6.6. Conclusion of Hypothesis Two

Entrepreneurs that apply effectuation as decision-logic are more likely to have higher financial growth levels than entrepreneurs that apply causation decision-logic

The financial growth was calculated for the respondents' firms over a three year period. What was evident was that the combined average financial growth of both the effectuation as well as the causation entrepreneurs was lower in the third year. It must also be noted that this study was done during the worst global financial crisis since the great depression. What was interesting is that the trend of the growth for the effectuation group showed an increase in percentage growth while the trend for the causation group showed a decreasing trend in growth. It therefore appears as if the effectuation group was adjusting better to the changes in the economy, especially since the recession which started in 2008.

No statistical significance was found to confirm this hypothesis. The study tested the yearly data for each year as well as the three year average to investigate whether a relationship exist between either effectuation or causation and the financial growth of a firm and found no significant correlation. It was found that the mean rank scores on all growth variables were very similar when comparing effectuation versus causation decision-logic groups. Non-parametric Mann-Whitney U-tests indicated that the year one financial growth, year two financial growth, year three financial growth as well as the average growth over

the three year period did not differ statistically significantly when comparing the effectuation and causation decision-logic groups. The researcher is however cautious with regard to these findings due to the current global financial crisis and must note that if this research was conducted under more normal circumstances that the results might have been different. It must further be noted that these firms might still have grown over this period although it might not have been financially. Growth happens on two fronts, the first being financial and the second being non-financial as Combs et al. (2005) stated.

6.7. Conclusion of Hypothesis Three

There is a relationship between risk tolerance and financial growth for effectuation decision-making logic

In order to determine whether there were statistically significant relationships between risk tolerance scores and financial growth, Pearson product-moment correlations were calculated. For this purpose, the risk tolerance score was grouped into seven different score bands as used by FinaMetrica profiling system (Table 16).

Table 16: Risk profile with the Typical Normal Distribution

Risk group	1	2	3	4	5	6	7
Score range	<25	25 - 34	35 – 44	45 - 54	55 - 64	65 - 74	75+
Typical distribution	1%	6%	24%	38%	24%	6%	1%

Source: FinaMetrica Pty Limited. (2011). Retrieved July 31, 2011, from FinaMetrica: <http://www.finametrica.com/>

In this risk profile system a low score represents an aversion to risk and a high score implies a higher level of risk tolerance. The middle segment is based on the mean \pm half a standard deviation and is represented by risk group four. In addition this profiling system has found that 86% of respondents will typically fall within risk group three to five. Some specific characteristics of respondents on either side of the scale (most extremes) are shown in Table 17 in terms of financial decision-making, dealing with financial disappointments and past financial behaviour.

Table 17: Risk Profile

Characteristics	Low risk tolerance (group 1)	High risk tolerance (group 7)
Making financial decisions	<ul style="list-style-type: none"> ✓ Think of risk as danger ✓ Have little confidence in their own ability to make sound financial decisions ✓ Usually feel pessimistic about their financial decisions after they made them ✓ Are only prepared to take, at most, a small degree of risk ✓ Are more concerned with the possible losses as oppose to the possible gains 	<ul style="list-style-type: none"> ✓ Think of risk as an opportunity or thrill ✓ Have a great deal of confidence in their ability to make sound financial decisions ✓ Usually feel very optimistic about their major financial decisions after they made them ✓ Are normally prepared to take a great deal of risk ✓ Are always more concerned about the possible gains than that possible losses
Dealing with financial disappointments	<ul style="list-style-type: none"> ✓ Typically adapt very uneasily 	<ul style="list-style-type: none"> ✓ Typically adapt very easily
Financial past	<ul style="list-style-type: none"> ✓ Typically they have taken very little risk with financial decisions ✓ They have never borrowed money to make an investment 	<ul style="list-style-type: none"> ✓ Typically they have taken a large to very large degree of risk with past financial decisions ✓ They typically borrow money for investments ✓ Three of every five have invested a large amount of money in a risky investment mainly for the 'thrill' to see if the investment went up or down

Source: FinaMetrica Pty Limited. (2011). Retrieved July 31, 2011, from FinaMetrica: <http://www.finametrica.com/>

According to this study the average score for entrepreneurs who follow an effectuation process was 55.1 placing them into group four. This means that these entrepreneurs have a moderate level of risk tolerance (average according to the profiling system used). The average score for entrepreneurs that follow the causation process was 61.3 placing them in group five (slightly higher than the profiling systems average) which is still within the expected norm as discussed earlier. This means that the entrepreneurs that follow a causation process generally have a slightly higher level of risk tolerance than those following the effectuation process. Once the researcher understood the risk profile of the two groups this was linked to the financial growth of the entrepreneurial firms.

Each respondent supplied their actual revenue growth for the firm over the past three financial years. An average financial growth was then calculated using the year one to year three growth percentages which was then used in a correlation analysis to determine whether a statistically significant relationship exist between the risk tolerance and financial growth. A weak positive correlation ($r=0.312$; $p= 0.082$) at the 10% level of significance was found between the risk tolerance score in the effectuation group and financial growth in year two. Thus, the higher the risk tolerance scores, the higher the percentage in financial growth in year two. The relationship between these variables was however, weak and was not confirmed in other years. This hypothesis was therefore not

supported as no statistically significant relationship was found between the risk tolerance and the average three year financial growth for the effectuation process.

6.8. Conclusion of Hypothesis Four

There is a relationship between risk tolerance and financial growth for causation decision-making logic.

No statistically significant relationship was found between the risk tolerance score and the financial growth for the causation decision-logic group. The researcher is of the opinion that the main reason for not finding a significant correlation in this hypothesis is similar to that of hypothesis three. The financial growth of these firms is once again influenced by the global crisis. What was evident is that this group consisted predominantly of males and has a significantly higher risk tolerance to that of the effectuation group which was more evenly split between males and females. In addition to this it seems that the growth of the entrepreneurial firms in the causation group is forming a downward trend. This may be interpreted to show that this group is less able to adapt to the adverse economic conditions.

6.9. Summary

The research showed that all four hypotheses were not supported, although there was some evidence to support the relationship between decision-making logic and risk tolerance levels. However effectuation decision-making logic does not have higher risk tolerance levels as originally hypothesised. It was found that entrepreneurs who apply causation decision-making logic have higher risk tolerance levels than entrepreneurs who apply effectuation decision-logic. In addition, the study further found that entrepreneurs have a moderate risk taking propensity.

Limited evidence was found to support a relationship between decision-making logic and growth. Non-parametric Mann-Whitney U-tests indicated that the financial growth of year one to three did not differ statistically significantly when comparing the effectuation and causation decision-logic groups. There was weak evidence in one year's financial growth and entrepreneurs that apply causation decision-logic, but it was not statically significant. Thus the decision-making logic does not influence the financial growth of the firm. However a case can be made that the current global financial crisis had an impact on the achievements of the entrepreneurial firms, which may partially explain the lack of evidence found.

CHAPTER 7: CONCLUSION

7.1. Introduction

The purpose of this research was to determine whether entrepreneurs with a higher propensity for financial risk should expect higher financial growth for their firms. In order to reach this conclusion the researcher had to understand the characteristics of entrepreneurs and how they make decisions. The research design was a quantitative, descriptive study. The survey method used in this study was a structured, self-administered questionnaire. The questionnaire was sent to South African based small and medium sized firms. A combination of two non-probability sampling techniques was used, namely convenience and snowball. The data was gathered via an internet online survey tool (SurveyMonkey) as well as an email questionnaire. Each potential respondent received an email containing a cover letter, the link to SurveyMonkey and a questionnaire attached to the email.

The sample of this survey consisted of 70 South African based SMEs. The sample was split into two groups following different decision-making logic, effectuation (34 respondents) and causation (36 respondents). The majority of respondents were full-owners of the SMEs. Additionally they were mostly male over the age of 35 years with a tertiary education. More than half of the respondents in both groups indicated that they have a personal before-tax income of less than R 500 000. The majority of the firms in the effectuation

group operates in the business services industry (29.4%), with the remainder operating in various industries ranging from construction to financial services. Over a third (36.1%) of the firms in the causation group operates in the telecommunications industry, while the rest of the firms are spread between the transport, construction, business services and financial services industries.

The data analyses were done using descriptive as well as inferential statistics. Descriptive statistics presented within this study included the number of participants, minimum and maximum scores, mean scores, mean ranked scores and standard deviations. The inferential statistics used in this study were the following: T-tests for independent samples, Mann-Whitney U-tests and Pearson product-moment correlations tests.

7.2. Effectuation, Causation and Risk Tolerance

This research supported that of Rust (2010) in that entrepreneurs seldom follow a single form of decision-logic in its true form. This is due to the fact that entrepreneurs as most other people are in general not strictly rational. Various factors influence each situation impacting on the decision process. The entrepreneur's rationality is limited by cognitive limitations, such as physiological constraints on computational capacity, and psycho-logical limitations, such as biases and fallacies (Payne, Bettman, & Johnson, 1993). Yet this does not imply that entrepreneurs are irrational. Entrepreneurial as well

as non-entrepreneurial decision makers may use experience and inductive logics to lead their decision-making process with varying levels of success. Sarasvathy (2001) explains that if the decision makers believe they are dealing with a relatively expected future, they will tend to do some regular information gathering and invest some effort on a reasonable analysis of that information, within certain limits. Sarasvathy (2001) continues by stating that if decision makers believe they are dealing with relatively unpredictable future, they will try to gather substantially more information through experimental and iterative learning techniques. This implies that the decision makers' underlying beliefs about the future occurrence that impact a particular decision can be deduced by examining the types of experiences and logical approaches they use in making the decision.

How does risk tolerance impact on the decision process? This study started by drawing on research from Xu and Ruef (2004) who defined risk as the degree to which the future outcome can deviate from the expected outcome. The ability of entrepreneurs to interpret and respond to uncertainty is often what determines the degree of success or failure achieved by the firm. In fact, the belief that entrepreneurs make decisions and subsequently act in the face of inherently uncertain futures is one of the most closely held assumptions in entrepreneurship (Rauch *et al.*, 2009). Uncertainty ultimately translates into risk as it will increase the degree with which an actual outcome can deviate from the expected outcome. This research has shown that entrepreneurs have a moderate propensity for risk taking which indicates that if the entrepreneur has

the correct resources and experience at his disposal he will pursue the opportunity. This is in line with the theory from Chandler et al. (2009) in terms of the affordable loss principle.

This study's results showed that entrepreneurs who follow a causation decision-making process have a statistically significantly higher level of risk tolerance, although still within the bounds of moderate risk taking, to that of entrepreneurs that adopt an effectuation decision-making process. The aim of this research was not to investigate the reasons as to why this difference exist, but it was interesting to note that the respondents of the causation group consisted of 80% males whereas the effectuation group had only 58% males and was therefore more evenly balanced in terms of the male and female distribution which might explain the difference in risk tolerance between the two groups.

7.3. Financial Growth

Rauch et al. (2009) stated that a direct link exist between financial growth and profitability which is based on the assumption that sales growth causes a proportional increase in expenses. Therefore when the entrepreneur accepts higher levels of risk to grow the firm the expenses will increase to gear up for this growth, however if the planned growth does not materialise or cannot be sustained over time it will prove difficult to cut back on expenses in the short term causing a decrease in the firm's margins. A thin line therefore exists

between healthy levels of risk tolerance as oppose to being overly tolerant to risk. The same also applies in terms of being overly risk averse. The entrepreneur has to make informed decision within an uncertain environment, which brings about the risk, however to much or too little risk will prove to be equally detrimental for the future financial growth of the business.

7.4. Potential Areas of Future Research

Firstly, a longitudinal study could provide better insight as it will be possible to track the risk score changes over a period of time and link it to the growth variance over time. This would therefore allow the researcher to link growth with risk tolerance levels and decision-making logic at various points to be compared over time which in turn will ensure that extreme economic conditions in the short term does not influence the research results. It could be possible to determine the effect of various economic conditions on the levels of risk tolerance.

Secondly, assessing overall risk tolerance which would include time risk, investment or financial risk, technical and competitive risk instead of only financial risk could provide a better insight as to how risk tolerance impact on decision-making and ultimately on financial growth. This could not be done in this study due to time and financial constraints. Linked to this future research in this field should also focus on how male and female business owners differ in terms of risk tolerance when making decisions?

Lastly, assessing financial success based on return on equity (ROE) might prove to be more insightful. ROE will add another dimension to financial growth which is a critical component when assessing financial growth.

7.5. Concluding Remarks

The aim of this research was to determine to what extent levels of risk tolerance impacts the effectuation and causation decision-making logic. In addition, it further explored how these decisions (made based on the perceived risk and evaluated against the entrepreneurs' own risk tolerance) impact on financial growth of a firm.

Entrepreneurs create jobs, but the success only comes to those who are able to quickly identify and systematically eliminate risks (Gilbert & Eyring, 2010). It is therefore of cardinal importance to understand how entrepreneurs make decisions in an uncertain environment. It was said by Vincent van Gogh that "The fishermen know that the sea is dangerous and the storm terrible, but they have never found these dangers sufficient reason for remaining ashore". This applies to entrepreneurs as well, in the sense that they are willing to take risks but the ones that take the appropriate risks are the ones that make it.

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Appendix 1 – Questionnaire

1. **Background Information**

1.1. **Gender**

- Male Female

1.2. **Age**

- <20 20-24 25-29 30-34 35+

1.3. **Race**

- Black Coloured Indian White
 Other

Other (please specify)

1.4. **The highest education level I attained, or the closest equivalent, is**

- Did not complete high school
 Completed high school
 Trade or diploma qualification
 University degree or higher qualification

1.5. **Having in mind income from all sources - work, investment, family and government - into which income bracket does your personal before-tax income fall?**

- Under R100 000 R500 000 - R999 999
 R100 000 - R249 999 R1 000 000 - R2 999 999
 R250 000 - R499 999 R3 000 000 or over

1.6. **What is your position in the firm?**

- Owners Shareholder
 Partner Other

Other (please specify)

1.7. **In which industry do you operate?**

- Business services Finance Services
 Retail Community & personal
 Tourism & Hospitality Telecommunications services
 Manufacturing Transport
 Construction Mining
 Wholesale Power / Electricity

1.8. **When was your firm founded?**

- Before 2000
 2000 to 2004
 2005 to 2009
 2010 to 2011

2. Decision-making Logic

- 2.1. What are the one or two main opportunities that prompted you to start this new business?**
- Have resources; Saved up to do it; Have large investors; Have loan or grant; Sold home, property or business; Can do better than the competition; Improve on current ways of doing things
 - Low overheads; Low cost property; Have property; Low start-up costs; Good product; Faith in product; Like product; Expansion of old/current business; Opportunity to buy building, property or business
 - New technology/product service; Good business idea; Take advantage of opportunity; High demand for product/business; Satisfy need; Market opportunity; Untapped market; Shift in market
- 2.2. What are the one or two main problems involved in starting this new business?**
- Start-up costs; Acquiring other capital/money; Financing; Researching/acquiring information on competitors; Price competition; Market competition; Competition - NFS; Acquiring information on business plans; Developing a business plan; Forecasting future costs; Scheduling/time management; Accounting; Acquiring location; Acquiring supplies; Acquiring experience/education
 - Not applicable
 - Any other problems
- 2.3. Did this new business emerge from your current work activity, from previous work activity, from a separate business that you now own and manage, from a hobby or recreational pastime, from academic, scientific or applied research or was it from an idea you or another member of the start-up team had?**
- Ideas from self or other member of the start-up team; Idea from family member (not part of the start-up team); Idea from other person (not part of start-up team)
 - Current work activity; Previous work activity; Separate business that you now own and manage; Hobby or recreational pastime
 - Any other
- 2.4. What is the current form of your business plan - is it unwritten or in your head, informally written or formally prepared?**
- Formally prepared
 - Unwritten or Informally prepared

- 2.5. Has an effort been made to collect information about the competitors of this new business, will an effort be made to collect information about the competitors in the future, or is it not relevant to the new business?**
- Yes, information has been collected about competitors
 - No, information has not yet been collected about the competitors; I will collect information in the future; No, not relevant
- 2.6. Has an effort been made to define the market opportunities for the new business, will an effort be made to define the market opportunities, or is the product / service still in the idea stage?**
- Yes, market opportunities have been defined
 - No, market opportunities have not yet been defined; I will define market opportunities in the future; No, it is not relevant
- 2.7. Is the product or service that this new business will sell completely developed and ready for sale or delivery, has it been tested with customers as a prototype or procedure, or is the product or service still in the idea stage?**
- Prototype/product has been tested with customers; Model/procedure is being developed; Still in the idea stage; No work done yet
 - Completed and ready for sale or delivery
- 2.8. I enjoy the uncertainty of going into a new situation without knowing what might happen.**
- Disagree or strongly disagree
 - Agree or strongly agree
 - Neutral

3. Risk Tolerance

- 3.1. Compared to others, how do you rate your willingness to take financial risks?**
- Extremely low risk taker
 - Very low risk taker
 - Low risk taker
 - Average risk taker
 - High risk taker
 - Very high risk taker
 - Extremely high risk taker
- 3.2. How easily do you adapt when things go wrong financially?**
- Very uneasily
 - Somewhat uneasily
 - Somewhat easily
 - Very easily
- 3.3. When you think of the word "risk" in a financial context, which of the following words come to mind first?**
- Danger
 - Uncertainty
 - Opportunity
 - Thrill
- 3.4. Have you ever invested a large sum in a risky investment mainly for the "thrill" of seeing whether it went up or down in value?**
- No
 - Yes, very rarely
 - Yes, somewhat rarely
 - Yes, somewhat frequently
 - Yes, very frequently
- 3.5. If you had to choose between more job security with a small pay increase and less job security with a big pay increase, which would you pick?**
- Definitely more job security with a small pay increase
 - Probably more job security with a small pay increase
 - Not sure
 - Probably less job security with a big pay increase
 - Definitely less job security with a big pay increase

- 3.6. When faced with a major financial decision, are you more concerned about the possible losses or the possible gains?**
- Always the possible losses
 - Usually the possible losses
 - Usually the possible gains
 - Always the possible gains
- 3.7. How do you usually feel about your major financial decisions after you make them?**
- Very pessimistic
 - Somewhat pessimistic
 - Somewhat optimistic
 - Very optimistic
- 3.8. Imagine you were in a job where you could choose to be paid salary, commission or a mix of both. Which would you pick?**
- All salary
 - Mainly salary
 - Equal mix of salary and commission
 - Mainly commission
 - All commission
- 3.9. What degree of risk have you taken with your financial decisions in the past?**
- Very small
 - Small
 - Medium
 - Large
 - Very large
- 3.10. What degree of risk are you currently prepared to take with your financial decisions?**
- Very small
 - Small
 - Medium
 - Large
 - Very large

- 3.11. Have you ever borrowed money to make an investment (other than for your home)?**
- No
 - Yes
- 3.12. How much confidence do you have in your ability to make good financial decisions?**
- None
 - A little
 - A reasonable amount
 - A great deal
 - Complete
- 3.13. Suppose that 5 years ago you bought shares in a highly regarded company. That same year the company experienced a severe decline in sales due to poor management. the price of the shares dropped drastically and you sold at a substantial loss. The company has been restructured under new management and most experts now expect it to produce better than average returns. Given your bad pas experience with this company would you buy shares now?**
- Definitely not
 - Probably not
 - Not sure
 - Probably
 - Definitely
- 3.14. Investments can go up and down in value and experts often say you should be prepared to weather a downturn. By how much could the total value of all your investments go down before you would begin to feel uncomfortable?**
- Any fall in value would make me feel uncomfortable
 - 10%
 - 20%
 - 33%
 - 50%
 - More than 50%

3.15. Assume that a long-lost relative dies and leaves you a house which is in poor condition but is located in a suburb that's becoming popular.

As is, the house would probably sell for R6000 000, but if you were to spend about R200 000 on renovations, the selling price would be around R1 200 000.

However, there is some talk of developing a huge low cost/high density housing project next to the house, and this would lower its value considerably.

Which of the following options would you take?

- Sell it as is
- Keep it as is, but rent it out
- Take out a R200 000 mortgage and do the renovations

3.16. Most investment portfolios have a mix of investments - some of the investments may have high expected returns but with high risk, some may have medium expected returns sand medium risk, and some may be low-risk/low-return. (For example, shares and property would be high-risk/high-return whereas cash and bank deposits would be low-risk/low-return.)

Which mix of investments do you find most appealing? Would you prefer all low-risk/low-return, all high-risk/high-return, or somewhere in between?

Please select one of the even portfolios listed below.

Columns range from "High risk/return" to "Low risk/return"

- 0% 0% 100%
- 0% 30% 70%
- 10% 40% 50%
- 30% 40% 30%
- 50% 40% 10%
- 70% 30% 0%
- 100% 0% 0%

3.17. You are considering placing one-quarter of your investment funds into a single investment. This investment is expected to earn about twice the bank deposit rate. However, unlike a bank deposit, this investment is not protected against loss of the money invested.

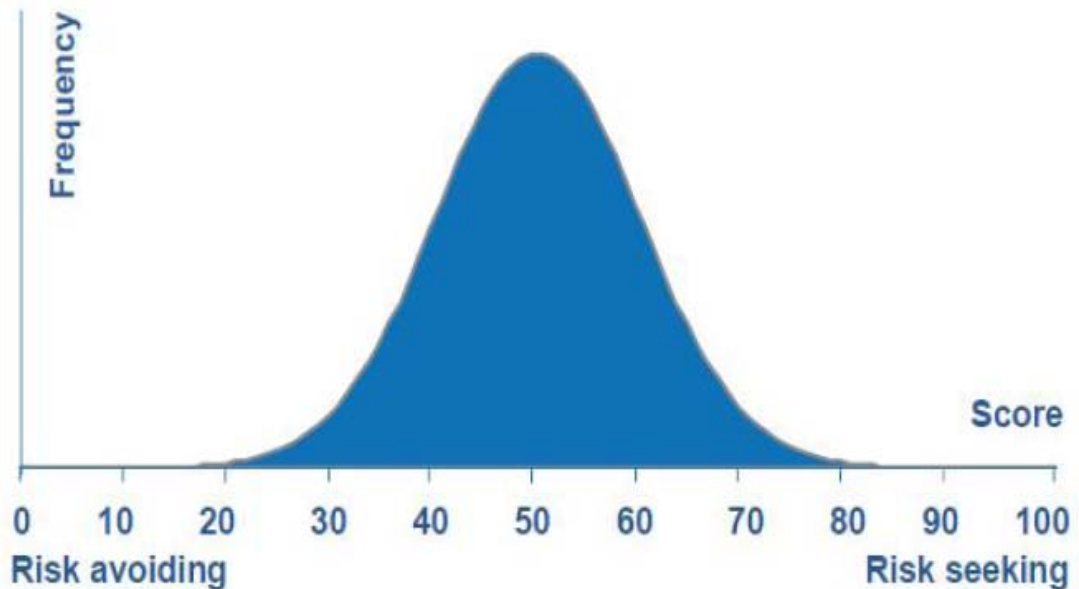
How low would the chance of a loss have to be for you to make the investment?

- Zero, i.e., no chance of loss
- Very low chance of loss
- Moderately low chance of loss
- 50% chance of loss

- 3.18. With some types of investment, such as cash and bank deposits, the value of the investment is fixed. However inflation will cause the purchasing power of this value to decrease. With other types of investment, such as shares and property, the value is not fixed. It will vary. In the short term it may even fall below the purchase price. However, over the long term, the value of shares and property should certainly increase by more than the rate of inflation. With this in mind, which is more important to you, that the value of your investment does not fall or that it retains its purchasing power?**
- Much more important that the value does not fall
 - Somewhat important that the value does not fall
 - Somewhat more important that the value retains its purchasing power
 - Much more important that the value retains its purchasing power
- 3.19. In recent years, how have your personal investments changed?**
- Always toward lower risk
 - Mostly toward lower risk
 - No changes or changes with no clear direction
 - Mostly toward higher risk
 - Always toward higher risk
- 3.20. When making an investment, return and risk usually go hand-in-hand. Investments which produce above average returns are usually of above average risk. With this in mind, how much of the funds you have available to invest would you be willing to place in investments where both returns and risks are expected to be above average?**
- | | | |
|-------------------------------|------------------------------|-------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 40% | <input type="checkbox"/> 80% |
| <input type="checkbox"/> 10% | <input type="checkbox"/> 50% | <input type="checkbox"/> 90% |
| <input type="checkbox"/> 20% | <input type="checkbox"/> 60% | <input type="checkbox"/> 100% |
| <input type="checkbox"/> 30% | <input type="checkbox"/> 70% | |
- 3.21. Think of the average rate of return you would expect to earn on an investment portfolio over the next ten years. How does this compare with what you think you would earn if you invested the money in bank deposits?**
- About the same rate as from bank deposits
 - About one and a half times the rate from bank deposits
 - About twice the rate from bank deposits
 - About two and a half times the rate from bank deposits
 - About three times the rate from bank deposits
 - More than three times the rate from bank deposits

- 3.22. Assume you can arrange your financial affairs to obtain a tax advantage. However a change in legislation can leave you worse off than if you had done nothing. With this in mind, would you take a risk in arranging your affairs to obtain a tax advantage?**
- I would not take a risk if there was any chance I could finish up worse off
 - I would take a risk if there was only a small chance I could finish up worse off
 - I would take a risk as long as there was more than a 50% chance that I would finish up better off
- 3.23. Imagine that you are borrowing a large sum of money at some time in the future. It's not clear which way interest rates are going to move - they might go up, they might go down, no one seems to know. Assume that, as is common in other countries, you could take a variable interest rate that will rise and fall as the market rate changes. Or you could take a fixed interest rate which is 1% more than the current variable rate but which won't change as the market rate changes. Or you could take a mix of both. How would you prefer your loan to be made up?**
- 100% variable
 - 75% variable, 25% fixed
 - 50% variable, 50% fixed
 - 25% variable, 75% fixed
 - 100% fixed
- 3.24. Insurance can cover a wide variety of life's major risks - theft, fire, accident, illness, death, etc. How much cover to you have?**
- Very little
 - Some
 - Considerable
 - Complete

This questionnaire is scored on a scale of 0 to 100. When the scores are graphed they follow the familiar bell-curve of the Normal distribution shown below. The average score is 50. Two-thirds of all scores are within 10 points of the average. Only 1 in 1000 is less than 20 or more than 80.



3.25. In the graph shown above. What do you think your score will be?

4. Financial Growth

1. Please supply your company's "annual revenue" over the past 4 years

Year 1	
Year 2	
Year 3	
Year 4	

Appendix 2 - National Small Business Amendment Act of South Africa, 2003

Sector	Size of Class	Total Full time employees	Total Turnover	Total Gross Asset Value (excl fixed-property)
Transport	Medium	200	R26m	R6m
	Small	50	R13m	R3m
	Very Small	20	R3m	R0.6m
	Micro	5	R0.20m	R0.10m
Finance and Business Services	Medium	200	R26m	R5m
	Small	50	R13m	R3m
	Very Small	20	R3m	R0.50m
	Micro	5	R0.20m	R0.10m
Community and Personal Services	Medium	200	R13m	R6m
	Small	50	R6m	R3m
	Very Small	20	R1m	R0.6m
	Micro	5	R0.20m	R0.10m
Agriculture	Medium	100	R5m	R5m
	Small	20	R3m	R3m
	Very Small	10	R0.50m	R0.50m
	Micro	5	R0.20m	R0.10m
Mining	Medium	200	R39m	R23m
	Small	50	R10m	R6m
	Very Small	20	R4m	R2m
	Micro	5	R0.20m	R0.10m
Manufacturing	Medium	200	R51m	R19m
	Small	50	R13m	R5m
	Very Small	20	R5m	R2m
	Micro	5	R0.20m	R0.10m
Electricity gas and Water	Medium	200	R51m	R19m
	Small	50	R13m	R5m
	Very Small	20	R5m	R1.9m
	Micro	5	R0.20m	R0.10m
Construction	Medium	200	R26m	R5m
	Small	50	R6m	R1m
	Very Small	20	R3m	R0.50m
	Micro	5	R0.20m	R0.10m
Retail & Motor Trade	Medium	200	R39m	R6m
	Small	50	R19m	R3m
	Very Small	20	R4m	R0.60m
	Micro	5	R0.20m	R0.10m