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The impact of education and experience on entrepreneurial success in Gauteng

Naidoo, Thishen

2017
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The impact of education and experience on entrepreneurial success in Gauteng

Thishen Naidoo

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2017

ABSTRACT

The current global economic climate remains a quagmire for global leaders as they attempt to find ways to carve out economic prosperity for their countries. In the South African context, government has the arduous task of stimulating growth and driving inclusive economic transformation to help redress the structural problems of the past. Entrepreneurship is vital to this transformation path. Furthermore, entrepreneurship in the manufacturing sector will be a crucial element of the growth agenda.

Previous studies across the extant entrepreneurship domain have provided strong evidence that education and experience are key requirements for entrepreneurial success. This study used a quantitative approach to determine the impact of education and experience on the success of South African entrepreneurs.

The study was limited to manufacturing entrepreneurs in Gauteng and used self-completion surveys (n = 111). Entrepreneurial success was operationalised through both growth and entrepreneur satisfaction. Growth was measured through growth in employment, sales and assets. Entrepreneurs were asked to rate their overall satisfaction with business performance to assess satisfaction.

Hierarchical regression, exploratory and descriptive statistics were used to test the hypotheses postulated. A small but significant association was found between education and employment growth. No statistically significant relationships were found between experience levels and growth. The lack of effect for specific experience might be expected since few entrepreneurs reported having prior entrepreneurial and industry related experience in this sample.

Investment in education and experience is still undoubtedly needed for entrepreneurs to succeed in South Africa. Government can stimulate entrepreneurial activity by promoting entrepreneurship at all levels of the

education system and help bridge the experience and skills divide through focussed intervention.

DECLARATION

I, Thishendren Naidoo, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Thishendren Naidoo

Signed at ……

On the …….. day of …… 20…..

DEDICATION

I dedicate this work to my partner, Jody and to my parents, who have been a source of strength and encouragement during this period.

ACKNOWLEDGEMENTS

With special thanks to:

- My supervisor, Boris Urban for his support, guidance and responsiveness.
- All the respondents who made the time to complete the questionnaire
- To my network of MBA friends who have been a source of inspiration and encouragement.
- To my family who have supported me through the MBA journey.

TABLE OF CONTENTS

ABSTRACT ii

DECLARATION iv

DEDICATION v

ACKNOWLEDGEMENTS vi

LIST OF TABLES x

LIST OF FIGURES xii

CHAPTER 1. INTRODUCTION 1

1.1 PURPOSE OF THE STUDY 1
1.2 CONTEXT OF THE STUDY 1
1.3 PROBLEM STATEMENT 4
1.3.1 MAIN PROBLEM 4
1.4 SIGNIFICANCE OF THE STUDY 5
1.5 DELIMITATIONS OF THE STUDY 5
1.6 DEFINITION OF TERMS 6
1.7 ASSUMPTIONS 6

CHAPTER 2. LITERATURE REVIEW 7

2.1 INTRODUCTION 7
2.2 ENTREPRENEURSHIP DEFINITION 7
2.3 DEFINING ENTREPRENEURIAL SUCCESS 9
2.4 GROWTH 13
2.5 ENTREPRENEUR SATISFACTION 15
2.6 THEORETICAL LINKS BETWEEN EDUCATION AND EXPERIENCE AND ENTREPRENEURIAL SUCCESS 16
2.7 EDUCATION AND ENTREPRENEURIAL SUCCESS 17
2.7.1 IMPACT OF EDUCATION ON ENTREPRENEURIAL SUCCESS IN DEVELOPED COUNTRIES 18
2.7.2 IMPACT OF EDUCATION ON ENTREPRENEURIAL SUCCESS IN DEVELOPING COUNTRIES 19
2.7.3 IMPACT OF EDUCATION ON ENTREPRENEURIAL SUCCESS IN SOUTH AFRICA 20
2.7.4 HYPOTHESIS 1: 21
2.8 IMPACT OF EXPERIENCE ON ENTREPRENEURIAL SUCCESS 22
2.8.1 HYPOTHESIS 2: 24
2.8.2 HYPOTHESIS 3: 24
2.9 IMPACT OF HUMAN CAPITAL ON ENTREPRENEURIAL SATISFACTION 24

2.10 CONCLUSION OF LITERATURE REVIEW 25

CHAPTER 3. RESEARCH METHODOLOGY 27

3.1 RESEARCH METHODOLOGY 27
3.2 RESEARCH DESIGN 28
3.3 POPULATION AND SAMPLE 29
3.3.1 POPULATION 29
3.3.2 SAMPLE AND SAMPLING METHOD 29
3.4 THE RESEARCH INSTRUMENT 29
3.5 PROCEDURE FOR DATA COLLECTION 33
3.6 DATA ANALYSIS AND INTERPRETATION 33
3.7 LIMITATIONS OF THE STUDY 35
3.8 VALIDITY AND RELIABILITY 35
3.8.1 EXTERNAL VALIDITY 36
3.8.2 INTERNAL VALIDITY 36
3.8.3 RELIABILITY 36
3.9 DEMOGRAPHIC PROFILE OF RESPONDENTS 37
3.9.1 DEMOGRAPHICS OF ENTREPRENEURS 37
3.9.2 DEMOGRAPHICS OF FIRM 39

CHAPTER 4. PRESENTATION AND DISCUSSION OF RESULTS 42

4.1 INTRODUCTION 42
4.2 DESCRIPTIVE STATISTICS 42
4.3 EXPLORATORY STATISTICS 45
4.4 REGRESSION PROCESS 47
4.5 EMPLOYEE GROWTH REGRESSION RESULTS 48
4.6 DISCUSSION PERTAINING TO EMPLOYEE GROWTH (HYPOTHESES H1A, H2A & H3A) 50
4.7 SALES GROWTH REGRESSION RESULTS 52
4.8 DISCUSSION PERTAINING TO SALES GROWTH (HYPOTHESES H1B, H2B & H3B) 54
4.9 ASSET GROWTH REGRESSION RESULTS 56
4.10 DISCUSSION PERTAINING TO ASSET GROWTH (HYPOTHESES H1C, H2C & H3C) 58
4.11 ENTREPRENEUR SATISFACTION REGRESSION RESULTS 58
4.12 DISCUSSION ON ENTREPRENEUR SATISFACTION 60
4.13 SUMMARY AND CONCLUSION OF THE RESULTS AND ANALYSIS 62

CHAPTER 5. CONCLUSIONS AND RECOMMENDATIONS 64

5.1 INTRODUCTION 64

5.2 CONCLUSIONS OF THE STUDY 64
5.3 RECOMMENDATIONS 65
5.4 SUGGESTIONS FOR FURTHER RESEARCH 66

REFERENCES 68

APPENDIX A 75

APPENDIX B 79

EMPLOYEE GROWTH HIERARCHICAL REGRESSION 79
SALES GROWTH HIERARCHICAL REGRESSION 82
ASSETS GROWTH HIERARCHICAL REGRESSION 85
ENTREPRENEUR SATISFACTION HIERARCHICAL REGRESSION 88

LIST OF TABLES

Table 1 Classifying definitions of entrepreneurship 8

Table 2 Different approaches to defining entrepreneur success 10

Table 3 Structure of questionnaire as related to the various variables 33

Table 4 Summary of regression equations 35

Table 5 Demographic profile of respondents 38

Table 6 Human capital profile of respondents 39

Table 7 Entrepreneur motivations 41

Table 8 Firm characteristics 41

Table 9 Definitions of firm size for manufacturing 41

Table 10 Summary descriptive statistics 43

Table 11 Correlation matrix of variables 44

Table 12 Hierarchical regression for employment growth 49

Table 13 Results for employment growth (model 3) 51

Table 14 Hierarchical regression for sales growth 53

Table 15 Results for sales growth (model 3) 55

Table 16 Hierarchical regression for assets growth 57

Table 17 Hierarchical regression for entrepreneur satisfaction 59

Table 18 Results for entrepreneur satisfaction (model 2) 61

Table 19 Summary of results 62

Table 20 Means, Standard Deviations and Cronbach alphas for constructs 79

LIST OF FIGURES

Figure 1 The variables used for assessing the impact of education and experience on entrepreneurial success 31

Figure 2 Hypotheses to be tested 34

CHAPTER 1. INTRODUCTION

"The most valuable of all capital is that invested in human beings." (Marshall, 1920)

“Entrepreneurs are like artists who dream, create and inspire. And they begin with a blank canvas. Their art is our future.” (Turton & Herrington, 2013)

1.1 Purpose of the study

The purpose of this research study is to assess and quantify the relationship between human capital - education levels and types of experience -, and the success of South African entrepreneurs in the manufacturing sector of the Gauteng province.

1.2 Context of the study

Entrepreneurship is a crucial element in the economic success of any nation (WEF, 2014). More specifically, it is seen as a catalyst for innovation resulting in new products and industries thus creating jobs and ultimately resulting in economic prosperity (Acs, Desai, & Hessels, 2008).

To understand the extent to which entrepreneurship impacts economic growth and prosperity, the London Business School and Babson College formed the Global Entrepreneurship Monitor (GEM). GEM conducted a longitudinal study to understand the implications of entrepreneurial activity on economic progress in 1999. These efforts were justified by a heightened awareness of governments and the implementation of public policy in various countries to stimulate entrepreneurial activity (Reynolds, Hay, & Camp, 1999). GEM devised the Total Entrepreneurship Activity (TEA) index which constituted the sum of the activities of both emerging and established firms, and used this index to measure the degree of correlation to GDP growth for various participating countries. Their initial study showed that the rate of a country’s economic growth was strongly correlated with entrepreneurial activity (Reynolds, Hay, Bygrave, Camp, &

Autio, 2000). In a sense the level of entrepreneurial activity can be used as a gauge of economic health.

This study explores entrepreneurial success in the context of the manufacturing sector due to the pivotal role it plays in a country's economy. Many countries have realised economic prosperity by developing their manufacturing sector and maximising exports from this sector. Evidence is apparent from many developed economies. China is a preeminent case of accelerated economic growth that was realised in part by developing the manufacturing sector and increasing production output (Song, Storesletten, & Zilibotti, 2011). Manufacturing represents a viable avenue for Africa to diversify and initiate its own economic transformation (UNCTAD, 2007). In the case of South Africa, the manufacturing sector already contributes substantially to the overall economy. The South African government views manufacturing as a key linchpin for economic transformation and is part of the National Development plan. Expansion in the manufacturing sector will help with transfer of skills in the labour market, boost exports and possibly integrate South Africa into global value chains (DTI, 2016). Based on this national imperative, further initiatives to grow manufacturing in South Africa will underpin future economic transformation. It is for these vital reasons that this sector has been chosen for this study.

Having acknowledged the role that entrepreneurship plays in the economic sphere, extensive research was also conducted into the determinants of entrepreneurial activity, from nascence to actual venture creation. Several factors in combination, determine the impact on both entrepreneurial activity and success (Praag, 1997) and are classified as financial capital, social capital and human capital. A fair degree of emphasis is placed on the entrepreneur and his or her attributes. Prior education and experience are classified as human capital and play a vital role in identifying opportunity and exploiting and establishing a successful entrepreneurial venture (Chandler & Hanks, 1994; Shane & Venkataraman, 2000).

South Africa has been participating in the GEM since 2001. With entrepreneurship high on the government agenda, it features prominently in the National Development Plan (NDP) and is considered as a solution to curb mounting unemployment rates in South Africa (NPC, 2013). The obstinately high youth unemployment rate of 48 per cent remains an area of high concern (Turton & Herrington, 2013). As of 2012, South Africa's TEA has dropped from 9.1 per cent to 7.3 per cent; a further cause for concern is the fact that South Africa's TEA is ranked as the lowest score among all Sub-Saharan African countries (Turton & Herrington, 2013). The base of current South African entrepreneurs is currently a meagre 2.3 per cent of the South African population (Driver, Wood, Segal, & Herrington, 2001). This figure is extremely low in comparison to other developing countries. This also points to underlying problems that are hindering South Africans from pursuing entrepreneurial ventures.

GEM ranks education and training in South Africa as having the lowest score of all the entrepreneurial framework conditions and as having the most significant effect on entrepreneurial activity (Reynolds et al., 1999). Under the apartheid regime, many South Africans were subject to inequality in access to education and employment opportunities. In addition, the schooling system itself lacked an entrepreneurial orientation which further stifled any entrepreneurial mindset and activity (North, 2002). The result of this system has meant that many South Africans lack education and experience related to entrepreneurial activity. In addition, factors related to social and cultural norms have further discouraged entrepreneurial activity due to fear of failure and mixed views on whether entrepreneurship is a viable career option (Driver et al., 2001).

Despite the South African government's extensive expenditure on education post 1994, the current education system is still not adequate to imbue South Africans with the necessary entrepreneurial skills. Isaacs, Visser, Friedrich, and Brijlal (2007), highlighted several issues with the South African education system which persist and prevent adequate transfer of entrepreneurial knowledge. This deficit in human capital presents a serious obstacle to accelerating entrepreneurial activity and warrants further study.

While the existing entrepreneurship domain largely supports the notion that human capital is positively correlated to entrepreneur success (Unger, Rauch, Frese, & Rosenbusch, 2011), some studies have found inconsistencies (Solomon, Dickson, Solomon, & Weaver, 2008; Van der Sluis, van Praag, & Vijverberg, 2004). Despite the number of studies conducted, comparability remains an issue due to heterogeneity in definitions of human capital and entrepreneurial success (Delmar, 2006). Furthermore, education systems, labour markets and prevailing economic conditions differ (Van der Sluis et al., 2004). Consequently, the ability to infer results across various nations becomes dubious. Perhaps a more reliable way to assess human capital effects could be obtained from meta-analytic studies. Several of these studies were conducted with most of these suggesting that human capital has a positive effect on entrepreneur success (Unger et al., 2011; Van der Sluis et al., 2004). Despite the use of large sample sizes in these kinds of studies, it must be noted that there is still limited data for developing economies.

1.3 Problem statement

1.3.1 *Main problem*

It is evident that the current research base provides limited insight for the South African entrepreneur. South African political history and the structural inequalities in education and the labour markets present a unique context. Both the developed and developing countries represent a different context which makes extrapolation of some findings problematic in the South African context.

Despite the emphasis on education, experience and training outlined in the GEM reports, few quantitative studies have been conducted to assess the impact of education and experience on entrepreneurial success in South Africa and in developing economies in general. This research study will endeavour to quantify the impact of education and experience on the success of South African entrepreneurs.

1.4 Significance of the study

This study contributes to the pool of existing research in the entrepreneurship domain for South Africa by quantifying the impact of human capital on success. The unique elements of this study are that success is considered in a holistic view through both growth and satisfaction. Finally, this study analyses the manufacturing sector which is a priority for the South African government.

The study could benefit nascent entrepreneurs in South Africa. By quantifying the impact of education and experience, individuals in this phase of the entrepreneurial process could make more informed decisions about their potential opportunities. The results of this study could offer some insights into the returns of education and experience on the venture's success.

For established entrepreneurs, it can be used as to assess the feasibility of undertaking further education or acquiring more experience and the extent to which it will impact on future business growth.

The study can be used by lenders and venture capitalists to give some insight into the viability of a proposed entrepreneurial opportunity based on the entrepreneur's current education and experience profile.

Government and the relevant policy makers do understand and appreciate the importance of education in fostering the entrepreneurial drive and skills in South Africa. Given the current unemployment impasse, it is hoped that this quantitative study will provide credible data and help facilitate meaningful changes in the current education system and existing policies to nurture entrepreneurship.

1.5 Delimitations of the study

- This study will be limited to entrepreneurship in the formal sector within South Africa and, thus, only considers opportunity entrepreneurs and not necessity entrepreneurs;
- Only the manufacturing sector will be considered in this study.

1.6 Definition of terms

Literature does not contain a widely accepted definition of entrepreneurship. For the purposes of this study the definition of entrepreneurship used will be that of the GEM (Reynolds et al., 1999): “any attempt at new business or new venture creation, such as self-employment, a new business organisation”.

Education will be defined in line with that of GEM and refers to a formal training ranging from primary and secondary school education to tertiary-level education.

Experience will be assessed in three ways: formal working experience, previous industry-related experience as it pertains to the entrepreneurial venture and previous start-up experience.

Entrepreneurial success was viewed as a multidimensional construct and assessed by both growth (Chandler & Hanks, 1993) and entrepreneurial satisfaction (Cooper & Artz, 1995). It included the traditional measures of growth in employment, sales, and assets. Entrepreneur satisfaction, though considered as a subjective measure, provided insight into the entrepreneur’s personal definition of success against personal objectives.

1.7 Assumptions

Although the study does not require the entrepreneur to disclose financial or other confidential information, it is assumed that the respondents provided honest and accurate information.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter presents a literature review of the impact of education and experience levels on entrepreneurial success. The review is structured to first explore several key definitions that are crucial for this study. First, the definition of entrepreneurship is reviewed as it has evolved over time and within different domains. This exploration provides a way to frame a suitable definition for this study. The literature review then explores the concept of entrepreneurial success to conceive of an appropriate definition for this study.

Thereafter, the impact of education and experience on entrepreneurial success are analysed separately. The review is based on research conducted in various countries. Finally, studies in the South African context are reviewed.

2.2 Entrepreneurship definition

The Dictionary of Business & Management (2009) defines entrepreneurship as: “A person who sets up a business or businesses, taking on financial risks in the hope of profit”. It further cites that the French origin of the word entrepreneur is from *entreprendre* or to undertake.

However, in the academic domain of entrepreneurship no universally accepted definition exists. According to Gedeon (2010) the definition of entrepreneurship is widely debated. Research seems to suggest the definition tends to differ based on the academic domain in which the term is used. Filion (1998) provided a structured approach to explore these different contexts. Praag (1997) summarised the existing literature on entrepreneurship and how it defines the function of the entrepreneur. This is shown in Table 1.

Table 1 Classifying definitions of entrepreneurship

	Period	Risktaker	Arbitrageur	Capitalist	Manager	Innovator
Cantillon	1680 - 1734	+++	++	+	o	o
Say	1767 - 1832	++	o	-	+++	++
Marshall	1842 - 1924	+	++	+++	+++	o
Menger	1840 - 1921	-	+	-	++	o
Knight	1885 - 1972	+++	o	-	-	+
Shumpeter	1883 - 1950	-	+	-	-	+++
Kirzner	1930 -	-	+++	-	o	o

The meaning of the symbols used to summarise the function aspects is

-	: aspect explicitly excluded
o	: aspect not included
+	: aspect implicitly included
++	: aspect explicity included
+++	: aspect essential to the theory

* Table extracted from Praag (1997)

Entrepreneurship was first defined in the economics domain. The entrepreneur is conceived as an individual who can combine certain inputs (capital, land and labour) and generate a profit in excess of these combined inputs (Schumpeter, 1934). Inherent in this definition, according to Cantillon (1775) and Say (1803), is the risk aspect that the entrepreneur bears given that it refers to their own capital. The concept of excess profit is captured in the risk theory of profit (Gedeon, 2010). Bruyat and Julien (2001) summarise the prevailing dichotomy of entrepreneurship in the economics domain: Say, who considers entrepreneurship as new venture creation as opposed to Schumpeter and Cantillon, who both regard the entrepreneur as an innovator.

The second domain that has contributed much to the field of entrepreneurship is the behavioural school and the trait school (Colton & Udell, 1976; McClelland, 1965). This approach sought to answer the question of who an entrepreneur is. Here the emphasis was placed more on the individual entrepreneur's characteristics. These characteristics referred to the traits school approach. Gedeon (2010) and Bruyat and Julien (2001) noted that although the traits school discovered some common themes among entrepreneurs, most entrepreneurs differed markedly among themselves and from non-entrepreneurs. Some of these common themes that have emerged are the drive for control, achievement, independence, leadership and an increased

willingness to take risks. The existing studies have failed to find significant results that support a single set of characteristics.

Nieman and Nieuwenhuizen (2009) classified behaviourisms as pertaining to the analysis of human behaviour. Behaviour relates to how an individual responds in different situations. The behaviour school emphasises the concept of new venture creation as an integral part of the entrepreneurship definition as opposed to considering only the individual traits of an entrepreneur (Gedeon, 2010).

GEM made special reference to new venture creation in the definition it used for its analysis (Driver et al., 2001). They noted that innovation is an important consideration in the context of entrepreneurship but that it does not always result in a new business. In speaking about the characteristics of entrepreneurs, GEM noted that these individuals are self-confident, passionate, determined and have a drive for achievement.

For the purposes of this study, the definition of entrepreneurship follows that used by GEM and considers it the creation of a new business by one individual or a group of individuals. The study itself is limited to the manufacturing sector in Gauteng.

2.3 Defining entrepreneurial success

Both entrepreneurial start-ups and established firms must measure their success. In established firms, success is naturally associated with financial measures. More complex tools have been developed over time, including balanced score cards, which evaluate strategy execution more holistically (Kaplan & Norton, 2005). These kinds of sophisticated performance measures have been widely adopted by large organisations but they do not always lend themselves to start-up firms and smaller businesses.

Chandler and Hanks (1993) highlighted the need for more appropriate measures for small businesses, especially start-up firms. Table 2 presents some of the research found pertaining to entrepreneurial success. It is evident

that the current research and theories pertaining to entrepreneurial success have been disparate and have not produced consistent results (Kumar, 2007). Some of the reasons cited for this lack of consistency can be attributed to differing definitions of entrepreneurship, confinement to a single discipline and failure to develop new constructs. Schutjens and Wever (2000) found distinct results for explaining the entrepreneurial success of new firms. They found that most academic research had explored success in different ways, although the same explanatory factors were used.

Although Table 2 does not represent an exhaustive review of entrepreneurial success, it is adequate to illustrate the point that entrepreneurial success can be viewed through different lenses and these subsequently influence the choice of measure for entrepreneurial success.

Table 2 Different approaches to defining entrepreneur success

Perspective from which success is explored	**Proxy for success**	**Authors**
Entrepreneur	Ability of business to survive and avoid voluntary exit	Van Praag (2003)
	Firm Growth	Krause, Frese et. al (2005)
	Firm Growth & Profitability	Watson et al. (2003)
	Firm growth	Siegel et. al (1993)
Entrepreneurial firm	Growth, Profitability	Glancey (1998)
Entrepreneur and business environment	Duration of self-employment	Nziramasanga & Lee (2001)
Entrepreneur, Firm & Business Environment	Growth, Entrepreneur satisfaction	Solymossy (1998) Schutjens & Wever 2000)

Success can be viewed, in a sense, from both an internal and an external perspective. An internal perspective refers to the features of the entrepreneurial firm itself and an external perspective refers to the macro environment in which the firm operates (Schutjens & Wever, 2000).

From an internal perspective, the concept of entrepreneurial success was always thought to be linked to financial measures (Walker & Brown, 2004) of the firm itself. Closer examination revealed that this concept cannot be conceived of as one-dimensional. One must consider a further dichotomy in the

internal perspective, namely, the entrepreneur themselves and the firm that they operate. This dichotomy is also articulated by Schutjens and Wever (2000).

It is reasonable to expect that entrepreneurial success can be attributed to the entrepreneurs themselves. The entrepreneurs' habits, personality and experience impact on the probability for success. These factors have their roots in the human capital theory of Becker (1975). Glancey, Greig, and Pettigrew (1998) noted that the success of the entrepreneurial firm can be directly attributed to that of the entrepreneur through their decisions that subsequently impact on the firm's profit and growth potential. Thus, entrepreneur motivations are an important consideration in the entrepreneurial success construct.

To understand how entrepreneurs, define their individual success, one needs to understand their motivations. Entrepreneurs opt for self-employment for several reasons. Individuals are sometimes forced into self-employment due to lack of employment opportunities. These individuals are referred to as necessity entrepreneurs. The individuals that identify and exploit an opportunity in the market can be considered as opportunity entrepreneurs (Driver et al., 2001). Intuitively, the definition of success can be subjective when considered along this entrepreneurial spectrum, i.e., a necessity entrepreneur may view success as firm survival, while an opportunity entrepreneur may measure success via growth, profitability or other suitable financial measures. This study is restricted to that of opportunity entrepreneurs.

Even in the case of opportunity entrepreneurs, Walker and Brown (2004) point out that the underlying motivation for many small business owners may not necessarily be financial gain and, hence, they questioned the pertinence of these financial measures as the sole universal gauge of entrepreneurial success. Their study found that independence, a sense of personal satisfaction and the need for flexibility is what motivated the start-up of many small businesses. Some studies have even shown that entrepreneurs willingly opt for self-employment at the expense of earnings to enjoy the non-monetary related benefits of being self-employed (Hamilton, 2000).

However, to gain a full internal perspective of success, the entrepreneurial firm itself still must be analysed. The firm characteristics are an important consideration. Walker and Brown (2004) concede that the combination of both financial and non-financial measures represented a more holistic approach to understanding success and that, in some instances, the non-financial measures took precedence in the mind of the entrepreneur. Solymossy (1998) noted that success should be expanded to include the entrepreneurs' expectations expressed as satisfaction and the traditional financial measures.

Firm characteristics, age in particular, can be an important variable in predicting success. Glancey et al. (1998) and Wijewardena and Cooray (1995) reference experience effects as related to firm age that could lead to economies of scale. However, they also acknowledge that younger firms could prove to be nimbler to adjust to the dynamics of the industry. Firm age is considered as control variables in this study.

Beyond the definition of entrepreneurial success, it is also important to understand the external factors that influence it. An understanding of these factors would be of great importance to both nascent and existing entrepreneurs, as well as venture capitalists and finance providers.

The external environment plays a huge role in the success of any business and provides the context for analysing success (Covin & Slevin, 1991). Although the entrepreneur is a risk taker, the macro environment must be assessed as he/she has little or no control over the forces that dictate the macro environment (Everett & Watson, 1998). They also found that up to 50% of small businesses fail due to economic conditions. Prevailing economic conditions have an influence on demand factors. Further consideration must be given to the industry structure and competitiveness, as this influences the mortality of firms (Schutjens & Wever, 2000). This view is shared by Lumpkin and Dess (1996) and Zahra and Covin (1995). Environmental hostility and dynamism are considered. Environmental hostility is a measure of how unforgiving the current industry conditions are, as brought on by drastic changes in the industry or intense competition (Zahra & Garvis, 2000). Environmental dynamism assesses

the state of change and its pace in an industry (Ensley, Pearce, & Hmieleski, 2006).

Past research into the factors that constitute entrepreneurial success has noted that it is a complex phenomenon, and that it is a product of several integrated factors. It is difficult to consider any of these factors in isolation and to presuppose any factor's significance over others.

Although no widely accepted framework exists, past research has shown that entrepreneurial success can be analysed at different levels: the entrepreneur, the firm and the business environment in which it operates (Solymossy, 1998). This framework is similar to that used by Everett and Watson (1998) in which they analysed business failure from an economic, industry and firm standpoint. This holistic approach to defining and measuring entrepreneurial success is also used by Cooper, Gimeno-Gascon, and Woo (1994) and Haber and Reichel (2007).

This study considers success through the framework developed by Solymossy (1998). Both the economic and non-pecuniary dimensions of success must be considered to provide a holistic understanding of success. This study considers both aspects of entrepreneurial success. Economic success is operationalised through growth and non-pecuniary through entrepreneur satisfaction. Firm characteristics relevant to these measures will be used and environmental hostility and dynamism will be used as measures to assess the external environment.

2.4 Growth

Growth is a factor commonly used to analyse entrepreneurial success (Chandler & Hanks, 1993; Glancey et al., 1998). Growth is an intuitive outcome for an opportunity entrepreneur.

Delmar (2006) highlights the heterogeneity in growth measures used by academics over time. This heterogeneity calls into question some of the research findings on entrepreneurial growth in the domain of entrepreneurship

research. The study used previous studies to compare the choice of growth, the time period for the study and the calculation of growth. In terms of choice of growth, turnover/sales and employment were the most frequent measure used. It was found that these objective measures are frequently used as they are readily available and entrepreneurs are inclined to disclose this kind of information.

Market share and performance relative to industry were also found in some studies, however, these are considered subjective measures. Both Delmar (2006) and Chandler and Hanks (1993) called into question the use of these subjective measures. However, Chandler and Hanks (1993) have duly noted that subjective measures have to be used sometimes in cases where entrepreneurs are reluctant to disclose information related to objective measures.

Delmar (2006) added a further level of granularity to the choice of growth measures. The choice of growth measure should also be considered carefully in terms of the various phases of growth. The growth phases are dictated by the demand levels. With the changes in demand, three phases are suggested. Initially, the demand changes as the customers become more aware of a product or service. Consequently, the second phase is when there is an increased demand resulting in increased sales. In the third phase, the entrepreneur then proceeds to make organisational changes to cope with the increased demand and this usually results in expansion of the operation through the employment of new staff. Changes in the organisation are always considered carefully by entrepreneurs as these have a direct impact on cash flow and fixed costs structure of the company. In these instances, entrepreneurs tend to evaluate changes in demand to assess their sustainability before proceeding with expansion decisions. This elucidation of the growth process further substantiates the use of change in sales and employment as valid measures of growth for this study. Furthermore, the consideration of both measures provides a more holistic understanding of growth. Both measures are considered.

Delmar (2006) also found that changes in assets is not a suitable choice of measure in some contexts. Industries that are service related may not display significant changes in assets year on year. However, in the case of manufacturing, it is an appropriate measure and is considered for the purposes of this study.

2.5 Entrepreneur satisfaction

The use of entrepreneur satisfaction to assess venture performance has always been viewed as a subjective measure. Cooper and Artz (1995) highlighted the importance of considering satisfaction as a performance measure since it would influence an entrepreneur's decision to maintain an existing venture or pursue other opportunities. When viewed from this standpoint, Cooper and Artz (1995) suggested that satisfaction is the critical success measure of the individual entrepreneur. In addition, previous research has shown that some entrepreneurs pursue new ventures motivated by the need for achievement, independence and flexibility in lifestyle (Walker & Brown, 2004). The use of venture growth as the sole measure can be limiting in cases where entrepreneurs are motivated by other factors (Reijonen & Komppula, 2007).

Cooper and Artz (1995) utilised discrepancy theory to explore the satisfaction of entrepreneurs. Discrepancy theory suggests that a gap always exists between an individual's objectives and expectations and the actual outcome. In their study, entrepreneurs were asked if their primary goal was related to increasing personal wealth or doing the kind of work that they were passionate about. Entrepreneurs were also asked about their initial expectations. From a satisfaction perspective, the entrepreneurs were asked to rank their satisfaction with current venture performance and the probability of starting the same business again. The study found that entrepreneurs with monetary gain as their prime motive had lower satisfaction levels than those that emphasised the need to do work that they were passionate about. Initial expectations of entrepreneurs were also positively correlated to satisfaction levels. The measures for entrepreneurial satisfaction used by Cooper and Artz (1995) is employed in this study.

2.6 Theoretical links between education and experience and entrepreneurial success

Education and experience are classified as characteristics of human capital. The theoretical link between education and experience and entrepreneurial success was developed in the theory of human capital, which has its roots in the economics domain. The concept was developed in a study that sought to understand the impact of college and high school education on income distribution in the United States (Becker, 1975). Becker (1975) noted that economists traditionally attributed much of the differences to the economic stance of people and the amount of capital resources. His study highlighted a more critical factor, that of human capital which could have been considered intuitive but was not widely researched at the time. From Becker's perspective, education (schooling and college education) had a positive impact on the productivity of individuals and this had subsequent effects on their income potential as they entered the job market.

The theory of human capital was further extended to the field of entrepreneurship and led to several studies to identify the possible effects of human capital on entrepreneurial success (Unger et al., 2011). Various studies have operationalised human capital in different ways, ranging from formal education to different types of experience.

In general, most studies have found positive results that suggest that human capital is indeed related to entrepreneurial success (Unger et al., 2011; Van der Sluis et al., 2004).

This study uses the theory of human capital as a theoretical basis to formulate and test hypotheses. Human capital will be explored through education level and types of working experience. Previous studies involving both these measures of human capital will be reviewed to formulate the hypotheses of this study.

2.7 Education and entrepreneurial success

Education plays a role in the development of entrepreneurs. Reynolds et al. (1999) outlined the role that education plays in promoting entrepreneurial activity and fostering the skills required for business start-up in the GEM. Further, they listed 'education and training' as part of the entrepreneurial framework conditions that shape entrepreneurial activity.

Solomon, Dickson, et al. (2008) distinguished between two types of education in the entrepreneurial context. They refer to 'general education' and 'education specific to entrepreneurship', a similar view to that of Unger et al. (2011). The latter term is more widely referred to as entrepreneurial education.

Research into various facets of entrepreneurial education is increasing. However, the question as to whether entrepreneurship can be taught remains contentious (Henry, Hill, & Leitch, 2005). Entrepreneurial education can be imparted at various levels ranging from compulsory schooling to post-doctoral qualifications. However, the effectiveness of any entrepreneurial education is also subject to the phase of the entrepreneurial process in which the individual is located (Henry et al., 2005).

The current literature does not always make a clear distinction as to the type of education. It is assumed that education in these studies would pertain mainly to general education. This study is limited to investigating the impact of general education.

In general, the assumption that education has a positive effect on entrepreneurial success is accepted (Unger et al., 2011). The challenge in accepting this outcome lies in the fact that many studies have not always produced consistent results.

Solomon, Dickson, et al. (2008) conducted an extensive literature review of previous studies linking education and entrepreneurial success. To consolidate their sum of the current findings, they noted that the biggest challenge lay in the different definitions used for education and the different measures utilised for

measuring entrepreneurial success. Similarly, studies by Van der Sluis et al. (2004) highlighted the same challenges in their meta-analysis.

The measurement of education has taken on different forms in various studies:

- Total years of education;
- Number of years of continuous schooling;
- Using ordinal variables to describe each level of education – Primary school, secondary school, college, university, etc.;
- Years of schooling;
- Using different ordinal variables – literacy, training and apprenticeship.

In addition to differing measuring techniques, the quality of education needs to be considered as this can differ regionally and nationally. This is a factor that seldom receives attention in many of the previous studies. Disparities exist among developed countries themselves (Van der Sluis, et al., 2004; Unger, et al., 2011) and within developing countries. Hence, this review analysed studies in both developed and developing countries to determine if consistent findings were found. This study is limited to the Gauteng province of South Africa, so this issue of quality is somewhat addressed by limiting the geographical location for the study.

2.7.1 *Impact of education on entrepreneurial success in developed countries*

Several studies have found significant results to support the notion that higher levels of education lead to higher levels of entrepreneur success. Kangasharju and Pekkala (2002) analysed the impact of education on business growth and survival in Finland through boom and bust cycles, and found that regardless of the prevailing market conditions, higher levels of education achieved levels of growth. Tamasy (2006) found that entrepreneurs with higher levels of education attained faster growth rates. Bosma, Van Praag, Thurik, and De Wit (2004) found that entrepreneurs with higher education generated higher profits in their study on Dutch start-ups.

Despite the various studies that substantiate the significant relationship between education and the entrepreneur, there is a fair degree of heterogeneity in the use of success measures. These measures range from profits and income to business survival (Van der Sluis et al., 2004) and this presents a challenge for comparison.

Perhaps a more reliable assessment of the education and the entrepreneur success relationship is through meta-analytic studies. Van der Sluis et al. (2004) used meta-analysis to determine the impact of schooling on entrepreneurial selection and performance in thirty-three industrialised countries. Of the ninety-four data sets used in the study, 48% used firm performance as a measure. The effect of education on performance was positively correlated to performance. This confirmed that the higher the years of education and the level of education, the higher the performance. However, this was not the case with the British schooling system that used A- and O-levels. The authors cited differences in the schooling systems as possible reasons.

A further observation made by Unger et al. (2011) in their meta-analytic studies was the inconsistencies related to the size of the association between success and human capital. They attributed this to the use of moderator variables and different contexts which further confounds the issue of using previous studies for meaningful comparison.

2.7.2 *Impact of education on entrepreneurial success in developing countries*

The relationship between education and entrepreneur success is more complex in developing countries. Although several studies support a positive association between education and success (Glick & Sahn, 2000; Goedhuys & Sleuwaegen, 2000; Kolstad & Wiig, 2015; Nielsen & Westergård-Nielsen, 2001), the contexts of these studies are highly dissimilar and additional control variables are included in these studies to account for these nuances.

Similarly, the meta-analytic study of Van der Sluis, Van Praag, and Vijverberg (2005) found a positive association between firm income and higher levels of

schooling. They noted, however, that this varies considerably depending on the geographic location within these countries, rural and urban areas, by gender and whether the firm was related to agricultural activity. Although the return to schooling in developing countries is comparable to the returns in industrialised countries, both studies differ significantly in context and choice of control variables. Hence the ability to compare results between different countries must be considered with this caveat.

2.7.3 *Impact of education on entrepreneurial success in South Africa*

Education in South Africa has traditionally lacked an emphasis on entrepreneurship and this has seriously impeded entrepreneurial activity (North, 2002). The apartheid regime imposed inequalities in education across the different racial groups and these structural problems present a unique context for entrepreneurship. The 1990s saw many policy interventions and changes in the education curriculum to cultivate an entrepreneurial spirit in South Africans.

South Africa has been participating in the GEM report since 2001. Driver et al. (2001) report that South Africa ranked 25th out of the participating 29 countries on the new firm index rating. This was the lowest ranking of all the developing countries and implied that South African start-ups have the lowest survival rates.

The report also investigated the perception of South Africans regarding the requisite skills for business start-up. The results showed that South African was ranked 22nd of the 29 countries and that the number of South Africans who perceived that they possessed these skills was well below the reported international average. The report also showed the effects of education on entrepreneurship. The report explained that basic education has been of an inferior quality. Some more pertinent findings from the report are:

- The possession of a matric qualification increased the potential for entrepreneurial activity, however, this was a marginal effect;
- Tertiary qualifications had a dramatic effect on entrepreneurial activity;

- Business owners with tertiary qualifications who start ventures are most likely to exist beyond the start-up phase.

The report also investigated the obstacles to developing entrepreneurs and 65% of the respondents cited education as the key impediment.

In the 2002 GEM report, Foxcroft, Wood, Kew, Herrington, and Segal (2002) emphasised that policies should be developed to address basic skills to improve financial skills and general business know-how. They urged policy makers to drive the teaching of these skills at both school and tertiary levels to stimulate entrepreneurial activity. This report also presented evidence that education level can be linked to the number of jobs created. This can be linked to a measure of entrepreneurial success related to firm size.

While the GEM reports emphasise the need for improved education, a critical limitation is that the reports do not quantify the impact of education on entrepreneurial success.

2.7.4 *Hypothesis 1:*

Based on the research presented from both developing and industrialised countries, there is evidence that education positively impacts on entrepreneurial success. It is acknowledged that a degree of disparity exists within countries, as well as between countries, which does create some inconsistency. However, the results from various meta-analysis studies, based on larger sample sizes, have shown positive associations between education and entrepreneurial success (Goedhuys & Sleuwaegen, 2010; Unger et al., 2011; Van der Sluis et al., 2005; Van der Sluis et al., 2004).

Based on the compelling evidence presented annually by GEM, education does have an impact on entrepreneurial success in South Africa.

Hypothesis 1:

a) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of assets growth in their venture.**

2.8 Impact of experience on entrepreneurial success

Experience also has a major role to play in the success of entrepreneurs. Often, experience is a crucial factor considered by investors and venture capitalists (Stuart & Abetti, 1990; Zacharakis & Meyer, 2000). Experience also needs to be classified in the entrepreneurial context and Dyke, Fischer, and Reuber (1992) offer a simple classification: prior experience gained in a small business setting referred to as entrepreneurial experience and business start-up experience. In a similar way, Unger et al. (2011) provide a more granular view of human capital by differentiating between task related and non-task human capital. Task related human capital in the context of experience refers to tasks relating to starting and running a business and industry related experience while formal work experience would be considered as generic or non-task related. Shrader and Siegel (2007) suggest that in light of human capital theory, higher levels of experience enable an entrepreneur to be more productive and achieve higher levels of success. Following this train of thought, this study will explore the effects of business start-up experience and industry related experience on entrepreneurial success as measured in years.

Several studies have found support for a positive association between prior entrepreneurial experience and success (Chandler & Hanks, 1998; Delmar & Shane, 2006; Haber & Reichel, 2007; Lee & Tsang, 2001; Shane & Stuart, 2002). With regards to industry related experience, similar findings have suggested a significant positive relationship to success (Bailey & Helfat, 2003;

Brüderl, Preisendörfer, & Ziegler, 1992; Dyke et al., 1992). Some studies have shown that when both education and experience are used simultaneously as predictors of success, then experience has a more prominent effect on success (Lee & Tsang, 2001).

Unger et al. (2011) used meta-analysis to test whether there is a difference in the impact on entrepreneurial success when task related human capital is compared with non-task related human capital. They considered previous entrepreneurial and industry related experience as having a high level of specificity as it relates to both content and process. They support the ideas of Gimeno, Folta, Cooper, and Woo (1997) who postulated that entrepreneurs with both start-up and prior industry experience have more knowledge of the industry and environment and, therefore, achieve higher levels of success. Unger et al. (2011) found that task-related human capital does in fact lead to higher levels of success.

The 2001 GEM report on South Africa presented some findings on experience linked to the lower TEA rates. In surveying the South African public, GEM found that only 30 per cent of South Africans believed they had the right experience to pursue entrepreneurial activities. The report also investigated experience effects for established business owners. A fair portion of these owner-managers were now engaged in new start-up firms. They found that previous entrepreneurial experience among owner-managers was a key factor in the survival rates of new firms.

The current base of research from both developed and developing countries presents varied findings on the different types of experience and its impact on entrepreneurial success. In the South African context, GEM suggests that prior entrepreneurial and industry related experience should have a positive effect on entrepreneurial success. However, the magnitude of this effect is yet to be determined.

2.8.1 *Hypothesis 2:*

a) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of assets growth in their venture.**

2.8.2 *Hypothesis 3:*

a) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of assets growth in their venture.**

2.9 Impact of human capital on entrepreneurial satisfaction

Existing research in entrepreneurial success has traditionally focussed on measuring growth and financials as evidenced in the review above. Few studies have integrated satisfaction into their assessment of entrepreneurial success. Carree and Verheul (2012) highlighted the need to assess satisfaction as it determines venture longevity.

Fewer studies have analysed the causal link between education and satisfaction. Studies by Bradley and Roberts (2004) and VandenHeuvel and Wooden (1997) have both shown that education has a negative association with

satisfaction. Carree and Verheul (2012) explained that this outcome might be attributed to high opportunity costs in the case of highly educated entrepreneurs.

The existing research assessing the relationship between experience levels and satisfaction is also sparse. Carree and Verheul (2012) make a distinction between general and specific human capital in assessing satisfaction. They make this distinction due to the concept of 'over-optimism' which may have an indirect effect on satisfaction. Over-optimism in the context of entrepreneurship refers to when an entrepreneur's expectations of a venture exceed the actual venture performance. They argue that specific human capital (entrepreneurial and industry related experience) is vital in shaping realistic expectations of an entrepreneur and ultimately the levels of satisfaction. However, their study still found that previous entrepreneurial experience had a negative impact on various aspects of satisfaction. Job similarity, however, had a positive effect on satisfaction with income and leisure time.

In the South African context, satisfaction is an important dimension in the entrepreneurial success construct. In line with the study by Carree and Verheul (2012), entrepreneurs will be asked about their motivations to start a new business. Given the low levels of entrepreneurial activity (Driver et al., 2001) and cultural and social norms which impose a fear of disappointment it is an important element that should be analysed to ensure entrepreneurial ventures survive in South Africa.

2.10 Conclusion of literature review

The current literature demonstrates that both education and experience are important determinants of entrepreneurial success. This research is an attempt to quantify the relative impact of both these factors on entrepreneur success (employment growth, sales growth, assets growth and satisfaction).

Hypothesis 1:

a) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher education levels of entrepreneurs and higher levels of assets growth in their venture.**

Hypothesis 2:

a) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of assets growth in their venture.**

Hypothesis 3:

a) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of employment growth in their venture.**
b) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of sales growth in their venture.**
c) **There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of assets growth in their venture.**

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research methodology

The primary objective of this study was to quantify the effects of education and experience on entrepreneurial success.

Quantitative studies follow a deductive approach (Bryman, 2012) and generally the hypotheses are developed by first examining theory and the existing literature. The process then proceeds to test these hypotheses by first measuring the relevant concepts and analysing the collected data to arrive at conclusions.

In the case of this study, the hypotheses were developed by examining human capital theory as it pertains to the entrepreneurial domain and used to derive models for entrepreneurial success.

Bryman (2012) emphasises the appropriateness of quantitative methods for the following reasons:

- The process of measuring allows subtle differences to be detected
- Measurement is a consistent way to establish differences
- Measuring provides more accurate ways to quantify the extent of relationships between concepts

Hence, the quantitative approach was utilised in conducting this study.

Although quantitative research is appropriate given the nature of this study, it does have its criticisms. Perhaps, the most important criticism is that there is a possibility that respondents can interpret concepts being measured by a questionnaire differently (Bryman, 2012).

3.2 Research Design

This research made use of a self-completion survey to test the validity of the proposed hypotheses regarding education and experience as related to entrepreneurial success. A cross-sectional research design was utilised to obtain the data from business owners required to perform a regression analysis.

This method of self-completion surveys was preferred to the structured interviewing process given the sample size in question. For the self-completion survey to effectively gather the required data, Bryman (2012) recommends that:

- the survey design be structured to ensure simplicity for the respondent to interpret the questions;
- the survey should favour closed questions;
- the survey be short and concise to minimise the risk of incomplete questions and losing the interest of the respondent (respondent fatigue).

These valid recommendations were factored into the design of the survey instrument.

Bryman (2012) highlights some of the pertinent advantages and disadvantages of adopting the self-completion survey approach. This approach is perhaps a more economical approach from a time and cost perspective. It also ensures that the data collected is not skewed by the interviewer, which could potentially be a problem encountered with structured interviews.

However, the lack of an interviewer does mean that there is a greater probability of encountering missing data. This could be a possible scenario in which the respondent is unable to answer a question due to lack of clarity or possible ambiguity. In this case, an interviewer could help to clarify any question. Self-completion also poses an additional challenge in which the researcher cannot always verify if the survey was completed by the required respondent of the study. Respondent fatigue also limits the survey design length.

These design considerations and concerns were factored into the design of the survey instrument. The final survey instrument was checked to ensure a simple

flow and readability. The survey length was controlled to ensure the questions were concise and that the respondents could complete the survey in ten minutes.

3.3 Population and sample

3.3.1 *Population*

The study was restricted to manufacturing companies in Johannesburg. The study was intentionally restricted to the manufacturing sector to ensure that meaningful conclusions could be derived for this sector.

3.3.2 *Sample and sampling method*

After considering the time and cost restraints, the non-probability sampling method was chosen. A probability sample would have been preferred since this enables the researcher to extend conclusions drawn from the sample to the population. The challenge with this kind of sampling in the context of this study is that it would have been time and cost intensive. In some cases, business owners drawn from this random sample could be reluctant to complete a survey and, consequently, impact on the sample size. Although the non-probability method would have been optimal for this study, the findings will be limited to the study sample and will not be generalised to the population.

The respondents were typically the business owners and had to comply with the following criteria:

1. An equity stake of 10% or more in the business venture;
2. Participation in the strategic management decisions of the business.

3.4 The research instrument

The self-completion questionnaire used in this study was based on prior research. The questionnaire had to measure the key constructs of the study: education, experience levels, entrepreneurial success.

The complete list of variables that the survey was designed to measure is shown in Figure 1.

Several existing research instruments were used to design the survey used in this research. These were used since they were previously tested and in some instances, the authors had already tested for validity and reliability, providing a useful checking mechanism for this study. This study used the following surveys to design an effective survey:

- The questionnaire used by Barreira (2004) since it was applied in the South African environment;
- The questionnaire used by Cooper and Artz (1995) to measure entrepreneur satisfaction;
- Environmental dynamism and hostility was measured using Zahra (1993) and Urban (2010).

Dependent variables Delmar (2006) highlights the challenges with choice of growth measures. Furthermore, he illustrates that calculating growth measures in relative and absolute terms yielded different results. This study utilised relative growth measures and the questions were structured in the research instrument accordingly. The disclosure of financial information is highly sensitive and absolute growth would have required the respondents to disclose specific sales and assets figures. This created a risk that respondents would not complete the survey and increased the chances of encountering missing data for critical information for the study's dependent variables. Therefore, this study used relative growth to measure employee, sales and asset growth. The time period considered was between 2012 to 2014. Delmar (2006) draws special attention to the time period when measuring growth. They found several studies that used a period of three years to assess growth. Urban and Sefalafala (2015) found that a time period of three years is sufficient and adequate for typical periodic fluctuations in growth. Employee growth was assessed by asking the respondent to confirm the number of employees at the end of both 2012 and 2014. Sales growth was captured by asking the respondents to provide the percentage sales at year-end in 2014 divided by sales at year end in 2012. Asset growth was captured by asking the respondents to provide the

percentage assets at year-end in 2014 divided by assets at year end in 2012. Entrepreneur satisfaction was measured using a 4-item, 5-point scale where 1 = very dissatisfied and 5 = very satisfied. Respondents were asked to rate their level of satisfaction with the financial performance of the business (sales and profit). The remaining two questions focused on the overall satisfaction with the business and whether the entrepreneur would pursue this business venture again given the opportunity to do so. This assessment of satisfaction is equivalent to that used by Cooper and Artz (1995). They reported an overall reliability of .90 as measured by Cronbach alpha. The reliability of satisfaction as measured in this study gave an overall Cronbach alpha of 0.9 which was reflective of good reliability.

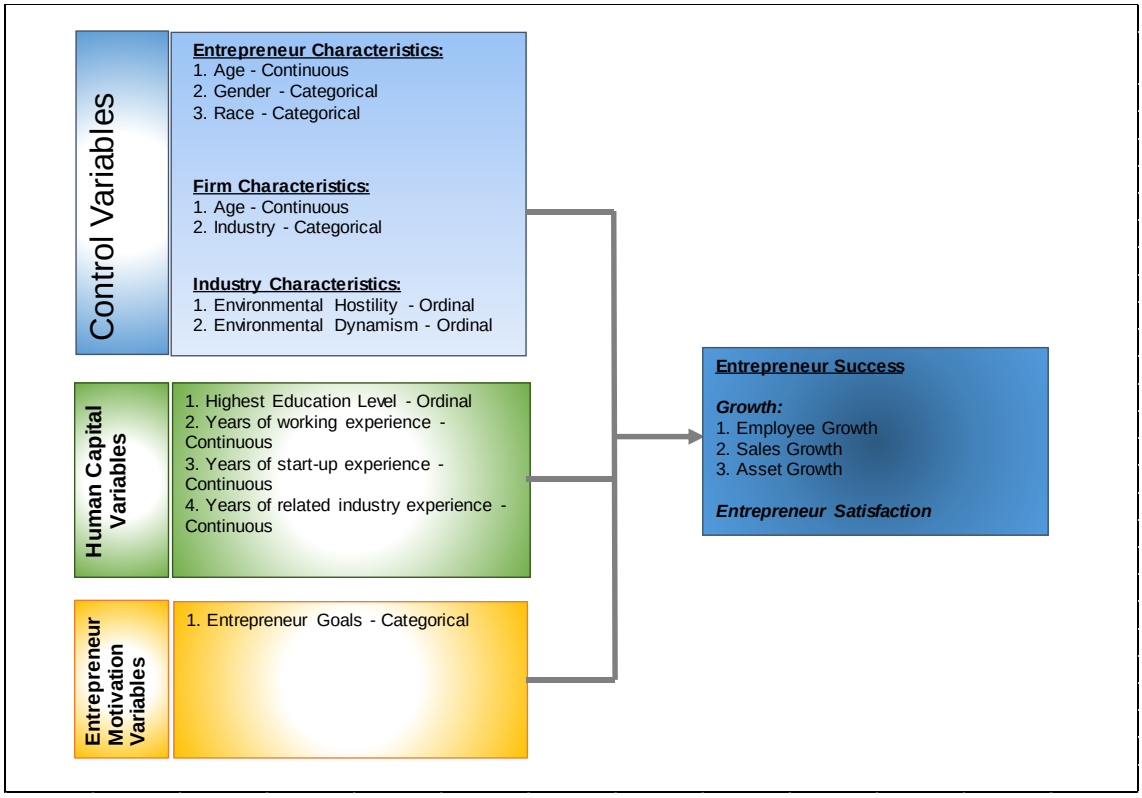


Figure 1 The variables used for assessing the impact of education and experience on entrepreneurial success

Independent variables

Entrepreneur characteristics were captured through age, gender (categorical – male and female) and race (categorical – white and non-white). In the case of gender, female was used as the reference category while non-white was used

as the reference category for race. In the case of firm characteristics, these were measured through firm age and industry sector. Respondents chose from eighteen sectors based on the standard SIC codes to classify the sector in which the firm operates. Both entrepreneur and firm related variables used in this study are in line with previous studies that demonstrated their relevance in quantitative studies of entrepreneur success.

Both the measures of environmental hostility and dynamism were assessed by a 5-item, 5-point scale represented by 1 = totally disagree and 5 = totally agree. Environmental hostility assessed the competitive intensity and propensity to make a profit in the industry while dynamism assessed the pace of change in the industry as it related to customers, competitors, product demand and general stability of the industry. These were then compared to the reliability reported by Urban (2010). He reported reliability with Cronbach alpha of .74 and .72 for environmental hostility and dynamism respectively. This was compared to the Cronbach alphas of .69 and.73 obtained from this study and these were deemed acceptable.

Respondents were asked to indicate their goals for starting their current venture. Goals included: 'to make more money',' to do the kind of work I wanted to do', 'to be independent', 'flexible lifestyle', 'other, please specify'.

Education was simply operationalised by asking the respondent to indicate the highest education qualification on a 7-point scale ranging from primary school up to PhD level. The response was recorded as an ordinal variable. In terms of experience, the respondent was asked to confirms years of start-up and industry related experience that they had accumulated. These variables were captured as continuous variables.

The complete questionnaire used for this study is shown in Appendix A. Table 3 provides a breakdown of the structure of the survey used and the various questions as it relates to the variables of the study.

Table 3 Structure of questionnaire as related to the various variables

Variable	Data type	Relevant question in survey
Entrepreneur Age	Continuous	2
Entrepreneur Gender	Categorical	3
Entrepreneur Race	Categorical	4
Industry Sector	Categorial	9
Firm Age	Continuous	5
Employment growth	Continuous	10 & 11
Sales growth	Continuous?	12
Asset growth	Continuous?	13
Entrepreneur satisfaction	Ordinal	14, 15, 16, 17
Entrepreneur goals	Categorical	18
Environmental hostility	Ordinal	19
Environmental dynamism	Ordinal	20
Highest education levels	Ordinal	21
Years of working experience	Continuous	22
Years of start-up experience	Continuous	24
Years of industry related experience	Continuous	26

3.5 Procedure for data collection

The survey was hosted online and emailed to business owners from the Johannesburg Chamber of Commerce listing.

Respondents were given the option of remaining anonymous in the survey to encourage participation as business owners are typically reluctant to share business information. To increase response rates, follow-up emails were sent two weeks after the initial email was sent out and, in some instances, follow up telephone calls were made.

3.6 Data analysis and interpretation

The data collected was analysed with various statistical tools to describe the sample. Thereafter, exploratory analysis was conducted due to the number of

categorical variables in this study. This was done using one-way ANOVA and T-tests. T-tests were first used to compare means in employment, sales and asset growth and entrepreneur satisfaction by gender and race. One-way ANOVA was used to compare means by industry sector, education levels and entrepreneur goals. Thereafter, hierarchical regression was conducted to test the hypotheses. Figure 2 shows the key constructs related to human capital and the hypotheses to be tested.

Hierarchical regression is a technique that involves the building of several models sequentially. In each successive model, new variables are added and the change in variance is analysed. If the change is statistically significant, then one can conclude that the variable/s added explains incremental variance of the dependent variable (Kim, 2016). The regressions were modelled on the equations in Table 4.

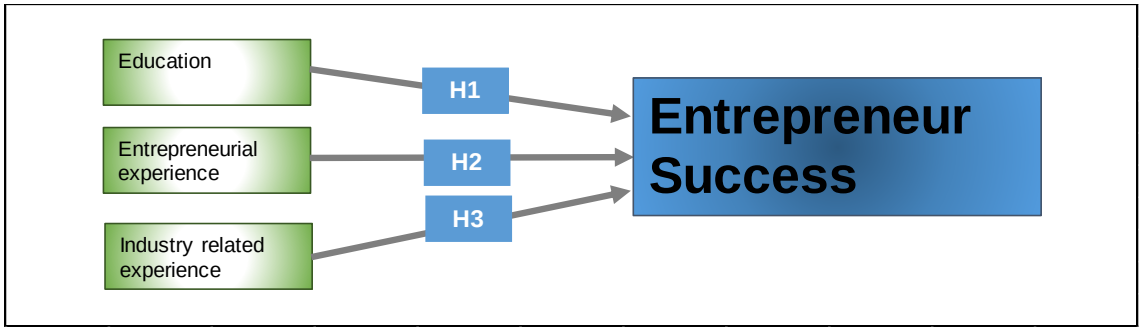


Figure 2 Hypotheses to be tested

Table 4 Summary of regression equations

Sales growth= $X_1B_1+u_1$	X_1 is a vector representing the independent variables
	B_1 coefficient vectors to be determined from regression
	u_1 refer to random error
Employee growth = $X_2B_2 + u_2$	X_2 is a vector representing the independent variables
	B_2 coefficient vectors to be determined from regression
	u_2 refer to random error
Assets growth = $X_3B_3+u_3$	X_3 is a vector representing the independent variables
	B_3 coefficient vectors to be determined from regression
	u_3 refer to random error
Satisfaction with performance = $X_4B_4+u_4$	X_4 is a vector representing the independent variables
	B_4 coefficient vectors to be determined from regression
	u_4 refer to random error

3.7 Limitations of the study

The following limitations were noted for this study:

- Other factors also have an impact on entrepreneurial success (Praag, 1997). Although some researchers have noted that there is a level of endogeneity between some of these factors, this study was primarily limited to understanding how human capital could impact entrepreneurial success;
- The randomness of the sample used in this study is a limitation. Although the sampling method used in this study was justified, a probability sample would be useful to draw more conclusions about the population.

3.8 Validity and reliability

Validity as described by Bryman (2012) refers to whether a means of measurement of a concept is entirely reflective of what the concept represents. Agarwal (2011), explains that construct validity becomes a significant issue when the researcher has no previous surveys to utilise and has to develop these.

In the context of this research, many of the constructs were measured using previously designed research instruments. The key dependent variables,

education and experience were simple to measure. Some of the other dependent variables were operationalised by several indicators on the same likert scale. Statistical tests were used to establish convergent validity. Since many of these constructs were developed in previous research, the reported Cronbach alphas were used to compare with the values found in this study.

3.8.1 *External validity*

External validity in this context relates to how the findings of the impact of education levels and experience of Gauteng entrepreneurs can be generalised beyond this province within South Africa. Since this study utilised a non-probability sampling method, the findings are limited to the sample itself.

3.8.2 *Internal validity*

Driver et al. (2001) emphasised that the level of education and entrepreneurial experience were hindering entrepreneurial activity in South Africa. They also provide some indications of these factors in other measures of entrepreneurial success, e.g., employment. Furthermore, they conducted extensive interviews with a panel of experts in the field of entrepreneurship in South Africa and the overwhelming responses concurred with these factors. Their findings provide confidence that these variables are strongly linked to entrepreneurial success measures.

3.8.3 *Reliability*

Reliability refers to the consistency of a measurement (Bryman, 2012). Reliability is a necessary check for quantitative studies and is important in multi-item measures.

The most common statistical test employed is that of the Cronbach alpha. In general, Cronbach alphas that are above 0.8 are considered to indicate very good reliability. However, values reported 0.6 and 0.8 are considered acceptable. As an additional check, measures developed in previous research also report Cronbach alpha values which provide a benchmark for comparison.

3.9 Demographic profile of respondents

Approximately four hundred (400) surveys were distributed by email. A total of one hundred and twenty-five (125) responses were received. A response rate of 31.2% was achieved.

Of the one hundred and twenty-five responses, only one hundred and eleven responses were adequately completed and used in this study.

The demographics of the sample are now explored by some key characteristics: age, gender, race (Table 5), education and, experience (Table 6). Thereafter, the attributes of the firm are analysed.

3.9.1 Demographics of entrepreneurs

Most of the respondents were between the ages of 40 and 60 years. This is as expected as the frequency of entrepreneurial activity in this age group is consistently higher than other age groups, as reported by Driver et al. (2001). The vast majority of respondents were male. This sample is broadly reflective of the general trend in entrepreneurship. Driver et al. (2001) found that entrepreneurial levels amongst males were higher than for females in the South African context. The race distribution showed most of the sample represented White ownership. Indian ownership, although sizeable in this sample, represented a distant second in this category. Driver et al. (2001) found that the White and Indian segments of the South African population have higher levels of entrepreneurial activity as compared to other segments. No Chinese respondents were observed in this sample. Due to the small observations in some categories, the race variable was reconfigured to combine all non-white respondents into a single category.

From Table 6, all respondents had completed a minimum of secondary schooling. A post-school diploma is the predominant qualification in this sample. A significant percentage of the sample had completed an honours degree. With regards to working experience, almost two-thirds of the sample had between one and ten years working experience prior to starting their own business and

were entering their first business venture. Most of the sample had between one and five years of prior business start-up experience. This is expected given that a small percentage of the South African population has prior entrepreneurial experience (Driver et al., 2001).

Table 5 Demographic profile of respondents

Age	**Frequency**	**Percent**
20 -30	4	3.60%
31 - 40	18	16.22%
41 - 50	37	33.33%
51 - 60	43	38.74%
61 -70	7	6.31%
> 70	2	1.80%
Gender	**Frequency**	**Percent**
Male	96	86.49%
Female	15	13.51%
Race	**Frequency**	**Percent**
White	85	76.58%
Black	6	5.41%
Coloured	4	3.60%
Indian	16	14.41%
Are you the founder of your company?	**Frequency**	**Percent**
Yes	74	66.67%
No	37	33.33%

All respondents reported an equity stake higher than 10% and were actively involved in strategic management decision making. Only 67% of the respondents were founders of their firms. Money and independence are the predominant goals for starting a business in this sample (Table 7).

3.9.2 Demographics of Firm

The majority of firms in the sample had been in operation for less than fifteen years (Table 8). A fair number of firms had been in operation for between sixteen and thirty years.

Industry sector was considered as another control variable for this study. The questionnaire followed the standard SIC codes which allowed the respondent to choose from eighteen sectors. Several of the sectors were not represented in this sample. To make the analysis more meaningful to this the sample, the industry sector was thoughtfully combined to create four new categories. Based on this reclassification, four condensed sector groupings were derived from the eighteen original sectors. The largest percentage of respondents participated in the instruments and control devices category (Table 8).

The definition of firm size was applied in accordance with the National Small Business Act. The Act defines firm size (Table 9) based on turnover and employee headcount for each sector. The questionnaire however, did not require reported turnover, hence the classification used in this instance is based on employee head count only.

For ease of classification in this study, the ‘very small’ and ‘small’ definition will be merged. Based on this categorisation, the sample had the largest proportion in the ‘small’ category (Table 8).

Table 6 Human capital profile of respondents

Education level	Frequency	Percent
Secondary School	19	17.12%
Post school diploma	51	45.95%
Undergraduate degree	10	9.01%
Honours Degree	17	15.32%
Masters Degree	13	11.71%
PhD	1	0.90%

Years working experience	Frequency	Percent
0 – 10	64	57.66%
11 – 20	34	30.63%
21 – 30	12	10.81%
> 30	1	0.90%

Is this your first business?	Frequency	Percent
Yes	71	63.96%
No	40	36.04%

Years start-up experience	Frequency	Percent
1– 5	23	20.72%
6 – 10	10	9.01%
11 – 15	3	2.70%
16 – 20	3	2.70%

Years industry related experience	Frequency	Percent
1– 5	20	18.02%
6 – 10	10	9.01%
11 – 15	14	12.61%
16 – 20	4	3.60%

Table 7 Entrepreneur motivations

What was the main motivation for starting your own business?	Frequency	Percent
To make more money	39	35.14%
To do the kind of work I wanted to do	13	11.71%
To be independent	35	31.53%
To have a flexible lifestyle	8	7.21%
Other, please specify	16	14.41%

Table 8 Firm characteristics

Firm age (years)	Frequency	Percent
0 – 15	47	42.34%
16 – 30	46	41.44%
31 – 45	7	6.31%
46 – 60	9	8.11%
> 60	1	0.90%
Sector	**Frequency**	**Percent**
Food & health	12	10.81%
Consumer goods	18	16.22%
Control & instrumentation products	43	38.74%
Other	38	34.23%
Firm Size	**Frequency**	**Percent**
Micro	8	7.21%
Small	65	58.56%
Medium	27	24.32%
Large	11	9.91%

Table 9 Definitions of firm size for manufacturing

Size	Turnover/ Rm	Employee headcount
Micro	0.2	5
Very Small	5	20
Small	13	50
Medium	51	200

CHAPTER 4. PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter combines both the results and the analysis of the study conducted.

The sample obtained from the survey is first discussed. Descriptive statistics are then applied to the sample to classify the sample in a meaningful way. The insights from the descriptive statistics provide context for the subsequent analysis.

The process used for the data analysis and manipulation is explained. Reliability for some constructs is tested and discussed.

Finally, the results of the regression models are presented. The hypotheses are tested against these results and discussed.

4.2 Descriptive statistics

Table 10 contains descriptive statistics of the sample. The relative growth during this period was very modest. This can be cross referenced to the South African Purchasing Managers Index (PMI) which is used as a health indicator of the manufacturing sector. The PMI combines various inputs including production output, employment and sales. An index above 50 indicates expansion in the sector. During the period from 2012 to 2014, the index shows a fair degree of volatility indicating that manufacturing was in a high degree of flux with product demand fluctuating.

Correlations are presented in Table 11. The analysis made use of Spearman correlations since several variables exhibiting deviations from normality and some study variables were of the ordinal type. Spearman correlations are typically used when the assumption of normality is violated (Hauke & Kossowski, 2011).

The growth variables showed moderate significant (p<.01) correlations to each other. This is consistent with the findings of Delmar (2006). Entrepreneur satisfaction also showed small but significant correlations with the three growth measures (p<.01). This is comparable to correlations reported by Wright, Liu, Buck, and Filatotchev (2008). This further substantiates the need to consider satisfaction in the analysis of entrepreneur success.

Industry related experience showed a moderate but significant (p<.05) to relative asset growth despite having small representation in the sample.

Table 10 Summary of descriptive statistics

	N	%	m	Sd
Age	111	100%	48.97	9.1
Gender				
Male	96	86.49%	-	-
Female	15	13.51%	-	-
Race				
White	85	76.58%	-	-
Non-white	26	23.42%	-	-
Sector				
Food & health	12	10.81%	-	-
Consumer goods	18	16.22%	-	-
Control & instrumentation products	43	38.74%	-	-
Other	38	34.23%	-	-
Relative employment growth	111	100%	0.17	0.46
Relative sales growth	111	100%	0.26	0.36
Relative asset growth	111	100%	0.12	0.39
Entrepreneur satisfaction	111	100%	3.37	0.95
Environmental hostility	111	100%	3.38	0.58
Environmental dynamism	111	100%	2.26	0.54
Entrepreneur Goals				
To make more money	39	35.14%	-	-
To do the kind of work I want to do	13	11.71%	-	-
To be independent	35	31.53%	-	-
Flexible lifestyle	8	7.21%	-	-
Other	16	14.41%	-	-
Work experience	111	100%	10.78	7.73
Start-up experience	111	100%	2.25	4.2
Industry related experience	111	100%	4.5	5.42

N = number of observations , m = mean, sd = standard deviation

Table 11 Correlation matrix of variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Age	1.00											
2. Firm Age	.18	1.00										
3. Environmental Hostility	-.06	.04	(.69)									
4. Environmental Dynamism	-.15	.02	-.03	(.73)								
5. Education	-.03	.00	-.03	.03	1.00							
6. Work experience (log)	.46***	-.41***	.06	-.19**	.08	1.00						
7. Start-up experience (log)	.09	-.19**	.15	-.09	.20**	.39***	1.00					
8. Industry related experience (log)	.26***	-.20**	.08	.13	.08	.38***	.01	1.00				
9. Relative employment growth (log)	-.10	-.17	-.09	.00	0.18	.05	.17	.06	1.00			
10. Relative sales growth (log)	-.13	-.05	-.14	.06	.09	-.10	.12	.16	.67***	1.00		
11. Relative asset growth (log)	-.15	-.05	.08	.00	-.04	-.08	.12	.22**	.47***	.55***	1.00	
12. Entrepreneur satisfaction	-.05	-.26**	-.10	-.10	.01	.05	0.09	.13	.56***	.62***	.43***	(.90)

*Cronbach alphas indicated on the diagonal, *** = p < .01, ** = p < .05*

4.3 Exploratory statistics

The statistical tests, one-way ANOVA and T-tests, were used appropriately to assess whether significant differences existed among the growth measures (employee growth, sales growth, assets growth and entrepreneur satisfaction) by categories of data in the sample. In this instance the test was applied to the four dependent variables: employee growth, sales growth, asset growths and entrepreneur satisfaction against industry sector, entrepreneur race, gender and education level. All three growth dependent variables displayed deviations from normality, hence, a logarithmic transformation was applied. Detailed statistics are reported in Appendix B.

Employee growth

Employee growth was compared by gender using an independent sample T-test. A statistically significant difference was confirmed between employee growth for male owned firms (m = .04, sd = .12) and female owned firms (m = -.05, sd = .12); t(106) = 2.63, p = .01. The results suggest that employee growth is higher in male owned firms.

Similarly, employee growth was compared by race. In this instance, no statistical difference is found between white (m = .03, sd = .16) and non-white (m= .03, sd = .11) owned firms; t (37) =.02, p = .98.

One-way ANOVA was used to establish whether employee growth exhibits statistically significant differences among sectors. The Welch test was used due to unequal variances; F(3, 30.60) = 6.49, p =.00. Statistically significant differences were found between the ‘consumer goods’ (m = .06, sd = .16) and ‘control & instrumentation’ sectors (m = -.02, sd = .08) based on the analysis of confidence intervals. Further differences were found between ‘control & instrumentation’ (m = -.02, sd =.08) and the reference sector, ‘other’ (m = .08, sd = .11).

In the case of employee growth based on entrepreneur goals, one-way ANOVA analysis showed statistically significant differences (F(4,103) = 3, p = .02). The

entrepreneurs who listed ‘to make more money’ as their primary goal (m = .08, sd = .13) displayed statistically significant differences from entrepreneurs who listed ‘to do the kind of work I want to do’ as their main goal (m = -.03, sd = .09) and from entrepreneurs who listed ‘flexible lifestyle’ as their main goal (m = -.04, sd = .10). In this sample, entrepreneurs motivated by money reported higher employment growth.

The effect of education on employment was also explored through one-way ANOVA analysis. No statistical differences were observed; F(2, 25.95) = 2.77, p = .08.

Sales growth

Sales growth was compared by gender using an independent sample T-test. No statistically significant difference (t(105) = -.93, p = .35.) was found between employee growth for male owned firms (m = .09, sd = .08) and female owned firms (m = .11, sd = .06).

Sales growth was also compared by race. In this instance, no statistical difference was found between white (m = .09, sd = .09) and non-white (m = .08, sd = .08) owned firms; t (105) = .16, p = .87.

One way ANOVA of sales growth by sector exhibited statistically significant differences F (3, 34.65) = 3.27, p=.03. Statistically significant differences were observed between the ‘consumer goods’ (m = .13, sd =.07) and ‘control & instrumentation’ sectors (m = .07, sd = .05).

In the case of sales growth based on entrepreneur goals, one-way ANOVA analysis showed no statistically significant differences (F(4,106) = 2.16, p =.08).

The effect of education on sales growth was also explored through one-way ANOVA analysis. No statistical differences were observed; F(2, 106) = 2.70, p= .07.

Assets growth

Assets growth was compared by gender using an independent sample T-test. No statistically significant difference (t(105) = -.71, p = .48) was found between asset growth for male owned firms (m = .03, sd = .03) and female owned firms (m = .04, sd = .04).

Assets growth was also compared by race. In this instance, no statistical difference was found between white (m = .04, sd = .03) and non-white (m= .03, sd = .04) owned firms; t (105) = -.35, p = .73.

One way ANOVA analysis showed that assets growth exhibited statistically significant differences among certain sectors; F (3,106) = 5.19, p=.00. Statistically significant differences were found between assets growth in the 'consumer goods' sector (m = .05, sd = .05) and the 'control & instrumentation' sector (m = .02, sd =.02). The difference in asset growth was also statistically significant between the 'control & instrumentation' sector (m = .02, sd =.02) and the 'other' sector (m = .04, sd =.03).

In the case of asset growth based on entrepreneur goals, one-way ANOVA analysis showed statistically no significant differences (F(4,106) = .51, p =.73).

The effect of education level on assets growth was also explored through one-way ANOVA analysis. No statistical differences were observed; F(2, 106) = .05, p = .95.

4.4 Regression process

Growth was explored through three variables (employee growth, sales growth and asset growth). Entrepreneur satisfaction was the fourth variable considered as part of the entrepreneur success construct.

Hierarchical regression was carried as a way to test hypotheses. Four successive models were created. The first model considered the effects of the control variables only. The second model considered the additional effect of entrepreneur goals. The third and fourth models tested the hypotheses

developed by testing the additional effect of adding education level and experiences levels respectively. The results for each of the four models were compared to analyse the predictive power of the variables added.

An initial linear regression was run for each dependent variable and each was independently tested for possible conflicts with regression assumptions. No serious violations were observed for model structure and multicollinearity. None of the regressions revealed the presence of a non-linear effect. The initial regressions displayed no signs of autocorrelation. A few variables (firm age, work experience, industry related experience and start-up experience) did show signs of heteroskedasticity. A log transformation was applied to these variables to address this problem. Several outliers were observed for each of the models. These were removed after analysing Cook's D and Standardised DFFit scores.

4.5 Employee growth regression results

In the case of employee growth, the dependent variable was transformed to the logarithmic equivalent to satisfy the normality assumption (Kurtosis = 1.47). Three influential outliers were removed.

The overall models obtained from the hierarchical regression all displayed significance at the 1% level as reported in Table 12. The base model (Model 1) with only control variables had an R^2 =.28 with the gender category 'male' and the sector category 'Instruments & Controls' as significant at the 1% level while environmental hostility was significant at the 5% level. By adding entrepreneur motivations in Model 2, the R^2 increased to .33. Thus, the addition of this variable explains a further 5% in variance of employment growth. In the third model, education levels were added. The R^2 increased by a further .06 to .39 with an adjusted R^2 of.29. Only the education level 'Post grad' was significant at the 1% level and this provides partial support for hypothesis H1a, higher levels of education lead to higher levels of employment growth. Model 4 includes the experience variables and there was an increase of 1% in the final R^2. However, in this model, neither industry related experience nor start-up experience exhibit

Table 12 Hierarchical regression for employment growth

	Model 1			Model 2			Model 3			Model 4		
Parameter	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Intercept	.29**	.13	.00	.25*	.14	.00	.16	.14	.25	.16	.19	.00
Entrepreneur Age	.00	.01	-.09	.00	.01	-.11	.00	.01	-.08	.00	.02	-.02
Race												
White	.00	.03	-.01	.03	.03	.01	.05	.03	.02	.04	.03	.02
Gender												
Male	.11***	.03	.29	.08**	.04	.02	.06*	.04	.16	.06*	.04	.17
Firm age (log)	-.06	.04	-.14	-.04	.04	-.10	-.04	.04	-10	-.06	.05	-.14
Industry Sector												
Food & Health	-.04	.04	-.09	-.01	.04	.03	-.02	.04	-.05	-.03	.04	-.06
Consumer Goods	-.02	.03	-.07	-.02	.03	.06	-.02	.03	-.05	-.02	.03	-.07
Instrumentation & Control products	-.10***	.03	-.40	-.10***	.03	-.40	-.10***	.02	-.41	-.10***	.03	-.39
Environmental Hostility	-.05**	.02	-.23	-.05**	.02	-.24	-.05**	.02	-.22	-.04**	.02	-.19
Environmental Dynamism	.00	.02	.00	.00	.02	.02	.01	.02	.02	.01	.02	.03
Entrepreneur Goals												
To make more money				.08	.05	.29	.09*	.05	.35	.11**	.05	.41
To do the kind of work I wanted to do				-.01	.05	-.03	-.01	.05	-.01	.04	.05	.01
To be independent				.03	.05	.11	.04	.05	.14	.04	.05	.16
Other				.01	.05	.04	.03	.05	.09	.04	.05	.12
Education												
Diploma/Degree							.05	.03	.18	.06*	.03	.21
Post Graduate							.11***	.04	.30	.11***	.04	.30
Work experience (log)										-.07	.10	-.10
Start-up experience (log)										.11	.10	.11
Industry related experience (log)										.07	.09	.08
F	4.14***			3.58***			3.85***			3.3***		
R^2	.28			.33			.39			.40		
ΔR^2	-			.05			.06			.01		
Adjusted R^2	.21			.24			.29			.28		

*Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10. "Non-white" is the reference category for the "Race" dummy variables. "Female" is the reference category for the "Gender" dummy variables. "Other" is the reference category for the "Industry" dummy variables. "Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables*

any statistical significance. Thus, hypotheses H2a and H3a are not supported. The overall adjusted R^2 shows little improvement over the four models which suggests that several variables have a small impact on the model's overall predictive capability.

Model 3 presents the best R^2 overall and this model is presented with bootstrapped coefficients in (Table 13). In this model, the education levels 'Postgraduate' and 'Diploma/Degree' showed significance at the 5% and 10% levels respectively. The industry sector 'Instruments & Controls' had significance at the 1% level. The education category 'Postgraduate' was the most important predictor of employment growth.

4.6 Discussion pertaining to employee growth (Hypotheses H1a, H2a & H3a)

Based on the results of the final regression model, Hypothesis 1a is partially supported. The R^2 is comparable to other studies in the extant literature which range from .10 to .30 (Box, White, & Barr, 1993; Chrisman, McMullan, & Hall, 2005). Based on the bootstrapped confidence levels, education level seems to be the most important predictor of employee growth. Although a few other variables showed significance in the hierarchical regression, they did not show any significance with the bootstrap analysis.

Entrepreneurs with post school qualifications did show small but significant differences in employee growth versus those with only secondary schooling. This outcome is in agreement with existing literature (Goedhuys & Sleuwaegen, 2010; Kolstad & Wiig, 2015). The effect on employee growth in firms with entrepreneurs who possess post-graduate qualifications is higher versus firms with entrepreneurs with only secondary schooling. Although this result is specific to this sample, it does make a somewhat compelling case for an entrepreneur who is uncertain about the return on investment in further tertiary studies.

Table 13 Results for employment growth (model 3)

	Effect on employee growth		
	B	*95% Confidence Intervals*	*β*
Intercept	.16	-.23 to .48	.25
Entrepreneur Age	.00	.00 to .01	-.08
Race			
White	.05	-.05 to .06	.02
Gender			
Male	.06*	-.03 to .16	.16
Firm age (log)	-.04		-10
Industry Sector			
Food & Health	-.02	-.11 to .05	-.05
Consumer Goods	-.02	-.09 to .07	-.05
Instrumentation & Control products	-.10***	.15 to -.06	-.41
Environmental Hostility	-.05**	-.09 to .02	-.22
Environmental Dynamism	.01	-.04 to .04	.02
Entrepreneur Goals		-.05 to .06	
To make more money	.09*	-.07 to .22	.35
To do the kind of work I wanted to do	-.01	-.15 to .14	-.01
To be independent	.04	-.11 to .19	.14
Other	.03	-.12 to .17	.09
Education			
Diploma/Degree	.05	-.01 to .11	.18
Post Graduate	.11***	.02 to .20	.30
R^2		.39	
Adjusted R^2		.29	
F		3.85***	

Notes for parameters: N = 108, B = unstandardized parameters,
*β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10.*
"Non-white" is the reference category for the "Race" dummy variables.
"Female" is the reference category for the "Gender" dummy variables.
"Other" is the reference category for the "Industry" dummy variables.
"Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables.

The various types of specific experience (start-up and industry related) had no significant effect in the initial and stepwise regression. Thus, Hypotheses 2a and 3a were not supported. This contrasts with various studies that have concluded that prior industry experience and start-up experience were positively associated with business performance measures (Bosma et al., 2004; Box et

al., 1993; Rauch, Frese, & Utsch, 2005). The inability to find a causal link between employment growth and experience could be attributed to sample size and a 'low power' problem when one considers the results from the meta analytic study of Unger et al. (2011) which found a small but significant effect on success measures based on a substantial sample. Only 54% of the sample indicated that they had prior industry experience while a 35% had previous start-up experience.

The 'Instruments & Controls' sector also exhibited a small but significant effect. This sector had a lower employee growth compared to the reference sector. None of the other sectors showed statistically significant differences compared to the reference sector. The effect observed for the 'Instruments & Controls' sector could possibly be attributed to a high-power problem, since 39% of the responses were attributed to this sector.

4.7 Sales growth regression results

In the case of sales growth, the dependent variable was transformed to the logarithmic equivalent to satisfy the normality assumption (Kurtosis = 1.26). Four influential outliers were removed.

The overall models obtained from the hierarchical regression all displayed significance at the 1% level as reported in Table 14 with the exception of Model 4 which included the experience variables and had a significance at the 5% level. The base model (Model 1) with only control variables had an R^2 =.14 with none of the control variables exhibiting statistical significance. By adding entrepreneur motivations in Model 2, the R^2 increased by .11 to .25. Thus, the addition of the entrepreneur motivation variable explained a further 11% in variance of sales growth. In the third model, education levels are added. The R^2 increased by a further 3% to .28 with a small change in adjusted R^2 to .16. None of the education categories displayed significance, hence, hypothesis H1b is not supported. Model 4 included the experience variables and there was an increase of 2% in final $R^{2,}$ with no change in the adjusted R^2. However, in this model,

Table 14 Hierarchical regression for sales growth

Parameter	Model 1			Model 2			Model 3			Model 4		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Intercept	.14*	.08	.00	.11	.09	.00	.05	.09	.00	.03	.13	.00
Entrepreneur Age	.00	.01	-.01	.00	.01	.12	.00	.01	-.05	.00	.01	.00
Race												
White	.01	.02	.04	.01	.02	.07	.01	.02	.04	.01	.02	.04
Gender												
Male	-.02	.02	-.08	-.04*	.02	-.18	-.04*	.02	-.18	-.04	.02	-.17
Firm age (log)	-.03	.02	-.14	-.02	.02	-.10	-.03	.02	-.11	-.04	.03	-.14
Industry Sector												
Food & Health	.01	.03	.05	.03	.03	.12	.02	.03	.09	.02	.03	.08
Consumer Goods	.04	.02	.18	.04*	.02	.21	.04*	.02	.21	.04*	.02	.19
Instrumentation & Control products	-.02	.02	-.13	-.02	.02	-.11	-.02	.02	-.15	-.02	.02	-.10
Environmental Hostility	-.01	.01	-.08	-.01	.01	-.07	.00	.01	-.04	.00	.01	-.01
Environmental Dynamism	.02	.01	.16	.03*	.01	.19	.03*	.01	.19	.03**	.01	.21
Entrepreneur Goals												
To make more money				.06*	.03	.37	.06*	.03	.39	.07**	.03	.46
To do the kind of work I wanted to do				-.02	.03	-.09	-.01	.03	-.05	.00	.04	-.01
To be independent				.03	.03	.16	.03	.03	.21	.04	.03	.24
Other				.02	.03	.09	.03	.03	.12	.03	.04	0.15
Education												
Diploma/Degree							.04*	.02	.23	.04**	.02	.26
Post Graduate							.02	.03	.08	.02	.03	.08
Work experience (log)										-.02	.07	-.03
Start-up experience (log)										.07	.07	.11
Industry related experience (log)										.08	.06	.16
F	1.75*			2.35***			2.32***			2.1**		
R^2	.14			.25			.28			.30		
ΔR^2	-			.11			.03			.02		
Adjusted R^2	.06			.14			.16			.16		

*Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10. "Non-white" is the reference category for the "Race" dummy variables. "Female" is the reference category for the "Gender" dummy variables. "Other" is the reference category for the "Industry" dummy variables. "Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables*

neither industry related experience nor start-up experience exhibited any statistical significance. Thus, Hypotheses H2b and H3b are not supported.

Model 3 presents the best R^2 overall and this model is presented with bootstrapped coefficients in Table 15. In this model, the education level 'Diploma/Degree' shows significance at the 10% level. The industry sector 'Consumer Goods' and environmental dynamism had significance at the 5% level.

4.8 Discussion pertaining to sales growth (Hypotheses H1b, H2b & H3b)

The final regression results did not provide support for all three hypotheses related to growth in sales. The difference between the R^2 and adjusted R^2 remained quite sizeable in each model suggesting that several low impact variables were contained in the model. Comparing the Model 1 sales growth to that of employment growth, there is considerable difference in the variation explained by the control variables. In Model 1 of employment growth, 28% of the variation was explained by only the control variables while only 14% of the variation in sales growth was explained. This suggests that other factors would need to be considered in future studies of sales growth.

The change in R^2 in Model 2 is substantial indicating that entrepreneur motivation does have a role in sales growth. Cassar (2007) found that entrepreneurs' reasons for starting their own ventures were indeed related to the actual venture performance. This longitudinal study did find a positive association between those entrepreneurs who wanted to achieve financial success and venture growth (both sales and employment).

Previous start-up experience and industry related experience showed no impact on sales growth in this sample. This is in contrast with current studies that found a positive and significant effect on sales growth (Chrisman et al., 2005; Shrader & Siegel, 2007; Unger et al., 2011). The inability to find a causal link between sales growth and start-up experience could be attributed to sample size and a 'low power' problem when one considers the results from the meta analytic

study of Unger et al. (2011) which found a small but significant effect on success measures based on a substantial sample.

Table 15 Results for sales growth (model 3)

	Effect on sales growth		
Parameter	*B*	*95% Confidence Intervals*	*β*
Intercept	.05	-.12 to .25	.00
Entrepreneur Age	.00	.00 to 0.01	-.05
Race			
White	.01	-.03 to .04	.04
Gender			
Male	-.04	-.09 to .01	-.18
Firm age (log)	-.03	.02	-.11
Industry Sector			
Food & Health	.02	-.02 to .06	.09
Consumer Goods	.04**	.01 to .08	.21
Instrumentation & Control products	-.02	-.06 to .01	-.15
Environmental Hostility	.00	-.03 to .02	-.04
Environmental Dynamism	.03*	.02 to .05	.19
Entrepreneur Goals			
To make more money	.06*	.03 to .11	.39
To do the kind of work I wanted to do	-.01	-.07 to .05	-.05
To be independent	.03	-.02 to .08	.21
Other	.03	-.02 to .08	.12
Education			
Diploma/Degree	.04*	00 to .08	.23
Post Graduate	.02	-.04 to .09	.08
R^2		.28	
Adjusted R^2		.16	
F		2.32***	

*Notes for parameters: N = 108, B = unstandardized parameters, β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10.*

"Non-white" is the reference category for the "Race" dummy variables.
"Female" is the reference category for the "Gender" dummy variables.
"Other" is the reference category for the "Industry" dummy variables.
"Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables.

Environmental dynamism also showed significance at the 5% level in the final regression. This variable was used as a proxy to measure the pace of change in the environment. Delmar (2006) describes sales growth as a very volatile measure of growth due to its sensitivity to market demand. During the period from 2012 to 2014, the PMI index showed a fair degree of volatility indicating that manufacturing was in a high degree of flux with product demand fluctuating. This degree of volatility is confirmed by the environmental dynamism responses observed in this sample. While a highly dynamic business environment presents several challenges in terms of predicting demand and anticipating competitor's responses, it may have other effects. It can encourage innovative thinking and force manufacturing firms to seek higher production efficiencies to reduce costs or investigate new technologies. The view that market fluctuation in demand is responsible for adoption of new technology is supported by Adner (2002).

4.9 Asset growth regression results

Asset growth was transformed to the logarithmic equivalent to satisfy the normality assumption (Kurtosis = 2.4). Four influential outliers were removed.

Of the four models, only the first model displayed significance at the 5% level as reported in Table 16. Models two and four had significance at the 10% level. The base model (Model 1) with only control variables had an R^2 =.17. By adding entrepreneur motivations in Model 2, the R^2 increased to .19. In the third model, education levels were added. The R^2 remained unchanged and the adjusted R^2 decreased to .06 and the ANOVA F was not significant. Therefore, hypothesis H1c is not supported. Model 4 included the experience variables and there was an increase of 6% in the final $R^{2,}$ with a 3% change in the adjusted R^2. Both start-up and industry related experience were significant at the 10% level. Thus, hypotheses H2b and H3b are not supported.

Table 16 Hierarchical regression for assets growth

	Model 1			Model 2			Model 3			Model 4		
Parameter	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Intercept	.05	.04	.00	.04	.04	.00	.03	.04	.00	.01	.06	.00
Entrepreneur Age	.00	.00	-.12	.00	.00	-.11	.00	0	-.10	.00	.00	-.02
Race												
White	.01	.01	.10	.01	.01	.10	.01	.01	.10	.01	.01	.11
Gender												
Male	.00	.01	-.02	-.01	.01	-.05	-.01	.01	-.06	.00	.01	-.05
Firm age (log)	-.01	.01	-.09	-.01	.01	-.08	-.01	.01	-.08	-.01	.01	-.01
Industry Sector										-.01	.01	
Food & Health	.00	.01	-.05	.00	.01	-.03	.00	.01	-.04	-.01	.01	-.06
Consumer Goods	.01	.01	-.09	.01	.01	-.10	.01	.01	.10	.01	.01	-.07
Instrumentation & Control products	-.02***	.01	-.31	-.02***	.01	-.31	-.02***	.01	-.32	-.02**	.01	-.25
Environmental Hostility	.01	.01	-.09	.01	.01	.10	.01	.01	.11	.01	.01	.15
Environmental Dynamism	.00	.01	.00	.01	.01	-.02	.01	.01	.02	.00	.01	.05
Entrepreneur Goals												
To make more money				.01	.01	.10	.01	.01	.12	.02	.01	.24
To do the kind of work I wanted to do				-.01	.02	-.07	-.01	0.2	-.06	.00	.02	.00
To be independent				.01	.01	.09	.01	.01	.11	.01	.01	.15
Other				.05	.02	.05	.01	.02	.06	.01	.02	.11
Education												
Diploma/Degree							.01	.01	.08	.01	.01	.13
Post Graduate							.01	.01	.08	.01	.01	.08
Work experience (log)										-.01	.03	-.06
Start-up experience (log)										.06*	.03	.20
Industry related experience (log)										.05*	.03	.23
F	2.18**			1.63*			1.43			1.61*		
R^2	.17			.19			.19			.25		
ΔR^2				.02			.00			.06		
Adjusted R^2	.09			.07			.06			.09		

*Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10. "Non-white" is the reference category for the "Race" dummy variables. "Female" is the reference category for the "Gender" dummy variables. "Other" is the reference category for the "Industry" dummy variables. "Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables*

4.10 Discussion pertaining to asset growth (Hypotheses H1c, H2c & H3c)

The regression results for assets growth did not provide support for all three hypotheses. Once again, there were substantial differences between the R^2 and adjusted R^2 values in all four models. As observed in the sales growth regression, Model 1 shows a large difference between R^2 and adjusted R^2 suggesting that there were variables with low impact on asset growth among the control variables. The addition of entrepreneur goal categories had little effect on the overall predictive power in Model 2. The results from both Models 1 and 2 support the need for a better understanding of asset growth and its determinants in the context of the manufacturing sector.

The experience variables did explained a further 6% of variance in asset growth although they were found to be significant at the 10% level. The inability to find a relationship between both start-up and industry related experience could be attributed to sample size.

4.11 Entrepreneur satisfaction regression results

Entrepreneur satisfaction satisfied the normality assumption (Kurtosis = 2.4). One influential outlier was removed.

All four models from the hierarchical regression were statistically significant. Models 1 and 2 were significant at the 1% level while Models 3 and 4 were significant at the 5% level. The control variables accounted for 21% of the variance explained for entrepreneur satisfaction. The addition of entrepreneur goals improved the R^2 by 4%. Models 3 and 4 though significant, only increased the R^2 value by 1% successively and the adjusted R^2 decreased overall in both models. Therefore, both education and experience do not contribute to the overall predictive power of the model as they exhibit no statistical significance.

For discussion, Model 2 will be presented with bootstrapped coefficients.

Table 17 Hierarchical regression for entrepreneur satisfaction

	Model 1			Model 2			Model 3			Model 4		
Parameter	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Intercept	5.07***	.83	.00	4.65***	.92	.00	4.87***	1.02	.00	5.97***	1.42	.00
Entrepreneur Age	-.01	.01	-.06	-.01	.01	-.06	-.01	.01	-.08	.00	.01	-.01
Race												
White	.24	.20	.11	.27	.20	.12	.29	.20	.13	.31	.21	.14
Gender												
Male	.02	.25	.01	-.25	.28	-.09	-.28	.28	-.10	-.26	.29	-.09
Firm age (log)	-.75**	.29	-.24	-.61**	.30	-.20	-.59*	.30	-.19	-.80**	.38	-.26
Industry Sector												
Food & Health	.30	.29	.10	.35	.30	.12	.36	.30	012	.28	.31	.09
Consumer Goods	.07	.26	.03	.20	.27	.08	.20	.27	.08	.13	.28	.05
Instrumentation & Control products	-.55***	.19	-.29	-.57***	.20	-.31	-.55***	.20	-.29	-.54**	.21	-.28
Environmental Hostility	-.19	.15	-.12	-.19	.16	-.12	-.20	.16	-.12	-.15	.17	.09
Environmental Dynamism	.06	.16	.04	.04	.16	.02	.03	.16	.02	.03	.16	.02
Entrepreneur Goals												
To make more money				.67*	.37	.35	.68*	.38	.35	.80**	.40	.42
To do the kind of work I wanted to do				.25	.41	.09	.22	.42	.08	.35	.44	.13
To be independent				.66*	.38	.33	.64*	.39	.32	.77*	.40	.39
Other				.26	.42	.10	.26	.42	.10	.35	.44	.13
Education												
Diploma/Degree							-0.12	0.24	-.06	-.06	.25	-.03
Post Graduate							0.06	0.31	.02	.13	.32	.05
Work experience (log)										-.33	.84	-.06
Start-up experience (log)										.44	.84	.06
Industry related experience (log)										.56	.76	.09
F	2.9***			2.52***			2.18**			1.86**		
R^2	.21			.25			.26			.27		
ΔR^2	-			.04			.01			.01		
Adjusted R^2	.14			.15			.14			.12		

*Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10. "Non-white" is the reference category for the "Race" dummy variables. "Female" is the reference category for the "Gender" dummy variables. "Other" is the reference category for the "Industry" dummy variables. "Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables*

4.12 Discussion on entrepreneur satisfaction

The final bootstrapped model has the industry sector ‘Instruments & Controls’ as significant at the 1% level. This might be attributed to a high-power problem due to the representation of this sector in this sample.

The overall result in Model 2 can be compared to results from the study of Carree and Verheul (2012). In their study satisfaction was operationalised by three distinct measures: leisure time, income and psychological burden. In the case of satisfaction with income, a significant positive association was found for job similarity. This suggests that there should be an effect for specific human capital on entrepreneur satisfaction. Once again, the sample size could be a constraint in finding an effect.

Table 18 Results for entrepreneur satisfaction (model 2)

	Effect on entrepreneur satisfaction		
	B	*95% Confidence Intervals*	*β*
Intercept	4.65***	2.68 to 6.80	.00
Entrepreneur Age	-.01	-.03 to .01	-.06
Race			
White	.27	-.15 to .68	.12
Gender			
Male	-.25	-1.06 to .61	-.09
Firm age (log)	-.61**	-1.31 to .08	-.20
Industry Sector			
Food & Health	.35	-.20 to .88	.12
Consumer Goods	.20	-.38 to .73	.08
Instrumentation & Control products	-.57***	-1.01 to -.18	-.31
Environmental Hostility	-.19	-.49 to .10	-.12
Environmental Dynamism	.04	-.30 to .39	.02
Entrepreneur Goals			
To make more money	.67*	-.63 to 1.66	.35
To do the kind of work I wanted to do	.25	-.96 to 1.29	.09
To be independent	.66*	-.56 to 1.66	.33
Other	.26	-1.04 to 1.32	.10
R^2		.25	
Adjusted R^2		.15	
F		2.52***	

Notes for parameters: N = 108, B = unstandardized parameters,
*β = standardized parameters, *** = p < .01, ** = p < .05, * = p < .10.*
"Non-white" is the reference category for the "Race" dummy variables.
"Female" is the reference category for the "Gender" dummy variables.
"Other" is the reference category for the "Industry" dummy variables.
"Flexible lifestyle" is the reference category for the "Entrepreneur Goals" dummy variables.

4.13 Summary and conclusion of the results and analysis

Table 19 Summary of results

	ANOVA F	Comments
H1a There is a positive relationship between higher education levels of entrepreneurs and higher levels of employment growth in their venture.	Significant at 1% level	Education level 'Post Graduate' significant at 5% level, 'Diploma/Degree' significant at 10% level. Hypothesis partially supported
H1b There is a positive relationship between higher education levels of entrepreneurs and higher levels of sales growth in their venture.	Significant at 1% level	Education level 'Diploma/Degree' significant at 10% level. Hypothesis not supported
H1c There is a positive relationship between higher education levels of entrepreneurs and higher levels of assets growth in their venture.	Not significant	Hypothesis not supported
H2a There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of employment growth in their venture.	Significant at 1% level	Start up experience not statistically significant. Hypothesis not supported
H2b There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of sales growth in their venture.	Significant at 5% level	Start up experience not statistically significant. Hypothesis not supported
H2c There is a positive relationship between higher prior entrepreneur experience of entrepreneurs and higher levels of assets growth in their venture	Significant at 10% level	Start up experience significant at 10% level. Hypothesis not supported
H3a There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of employment growth in their venture.	Not significant	Industry related experience not statistically significant. Hypothesis not supported
H3b There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of sales growth in their venture.	Significant at 5% level	Industry related experience not statistically significant. Hypothesis not supported
H3c There is a positive relationship between higher industry related experience of entrepreneurs and higher levels of assets growth in their venture	Significant at 10% level	Industry related experience significant at 10% level. Hypothesis not supported

The results obtained from the hierarchical regression (Table 19) based on this sample did not always demonstrate results consistent with previous studies. In the case of employment growth, post graduate levels of education did have a small but significant effect. Diploma and degree levels of education only exhibited significance at the 10% level for the case of sales growth. It must be noted that the low adjusted R^2 values suggest that a different combination of variables might have to be considered for sales growth in future studies. In the case of asset growth, education levels had no incremental impact on the variance explained while start-up and industry related experience showed significance only at the 10% level. It must be noted that approximately 35% of the sample reported having prior start-up experience and approximately 40% had industry related experience. This representation is consistent with the findings of Driver et al. (2001) and further highlights the lack of prior entrepreneurial experience across the country. While compelling evidence from previous studies has (Unger et al., 2011) shown the impact of specific human capital on growth measures, the absence of this effect in this sample is attributed to sample size and a low power problem.

Although significant effects for both education and experience were not fully realised from the analysis of the sample, the results of this study have shown that a relationship does exist between the different growth measures. These would have to be validated in further studies.

Entrepreneur goals have shown an impact on both employment and sales growth as well as entrepreneur satisfaction. Although no large and significant effects were found in the results, this variable did show a significant amount of overall variance explained in the hierarchical regression scheme and warrants more investigation.

This sample was based on data over a three-year period. Although the existing literature indicates that this period might be sufficient to account for expected volatility in market conditions, perhaps a longer time period would have been more suitable.

It is apparent that entrepreneur success is certainly not a one-dimensional construct and that several elements need to be examined to derive a holistic picture. This view concurs with that of Delmar (2006) who found that a myopic view of growth can skew the results obtained and reduce the academic value of the study. Furthermore, as each measure can be conceived of as a proxy for the different stages in the evolution of the venture, the choice of growth measure needs careful consideration to derive results for meaningful comparison with the extant repository of studies.

CHAPTER 5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the salient findings from the results of this study. It analyses these findings in the context of the study. Thereafter, the implications or key stakeholders are discussed before providing recommendations for future research.

5.2 Conclusions of the study

Although the relationship between education and experience and entrepreneur success was not unanimously proven for the hypotheses tested, the results based on this moderate sample size provide evidence that both have an impact on entrepreneurial success. In this instance, general human capital or education showed positive association with entrepreneur success. This contrasts with the existing studies that have found a stronger relationship between specific human capital (start-up experience and industry related experience) and entrepreneur success. This sample contained a small percentage of respondents that had start-up and industry related experience which could have constrained the ability to find an effect.

Growth indicators are most definitely distinct and their determinants differ (Delmar, 2006). Further studies measuring growth will need to consider the growth phase of a venture to select a suitable combination of indicators. Consideration of the time period for the study can be crucial. The researcher must be cognisant of prevailing market conditions and exercise good judgement to decide on a suitable time frame. Sales growth is very sensitive to market fluctuations therefore a longer measurement period could help to better account for seasonality. Employee growth on the other hand tends to be more stable

over time and since it represents a fixed cost in the venture, entrepreneurs exercise caution when increasing headcount. Asset growth is a complex measure of growth especially in the context of manufacturing. As demand grows and becomes more stable in the longer term, entrepreneurs could opt to outsource and defer investment in additional production assets (Delmar, 2006). If this growth indicator is to be considered for future studies in the manufacturing sector, then the researcher should administer the survey to better understand venture business model.

Entrepreneur goals could potentially be an important consideration in assessing entrepreneur success. If goals of entrepreneurs evolve and change over the venture lifespan, as Cassar (2007) suggests, then it is likely that growth and satisfaction will be impacted.

5.3 Recommendations

The results of this study do show some support that both higher levels of education and experience lead to higher levels of success. Nascent entrepreneurs will certainly realise a return on investment for tertiary qualifications. This present a compelling case when one considers that tertiary education also increases one's alertness to opportunity as found by Driver et al. (2001). The same recommendation would apply to active entrepreneurs.

In the context of investors and venture capitalists, education and experience have a definite role in assessing the viability of an entrepreneur. This study highlights the need to also look at softer measures like entrepreneurs' goals as they do have an impact on performance of the venture.

Although this study did not ask entrepreneurs if they had undergone any formal entrepreneur education, it is vital for all levels of the education system in South Africa to emphasise that entrepreneurship is a viable career path. Based on the results from this study, the formal education system remains a valuable tool which can be leveraged to foster entrepreneurship. The education system needs to do more to educate people and give them basic skills to start and manage a venture. Only a small percentage of the South African population

believed that they had the skills to start a business (Driver et al., 2001). At the schooling level, government should consider how to include experiential elements in the syllabus. Government could look to other countries to explore how to change perceptions about entrepreneurship at a young age and the lessons learned (Solomon, Fuchs, Werner, & Wallau, 2008). These lessons can be used to modify the syllabus. This requires urgency and momentum as this will be vital in economic transformation which is currently part of on-going national dialogue.

With rising youth unemployment, universities and other further training institutes have a role to play in stimulating entrepreneurship. Elements of entrepreneurship need to be integrated into the curriculum to help empower students.

From an experience perspective, the low levels of specific experience in this sample are a testament to the issues in South African entrepreneurship. Government will need to work closely with business incubators and explore programmes to help bridge the experience divide. Government should consider focussed intervention for key industry sectors within manufacturing, to help drive skills transfer and help nascent entrepreneurs develop the necessary industry expertise to take the next step in entrepreneurship journey.

5.4 Suggestions for further research

This study should be replicated given the importance of entrepreneurship and the manufacturing sector. The study should be limited to one key high growth industry sector within manufacturing and consider reducing the number of control variables. To determine the choice of growth measure, the researcher should assess the age of the venture and the current dynamics of the industry. A priori power analysis could possibly be conducted using the existing studies to establish the size of the sample required.

An investigation into the growth measures and how they apply to different stages of venture growth will be a study of interest. The study can use a

combination of qualitative and quantitative methods to identify the determinants of these variables or possibly meta-analytic techniques.

As government considers incremental changes to the schooling system to encourage entrepreneurship it will be important to assess whether these changes will result in higher levels of entrepreneurial intention. A longitudinal study could be explored to measure the entrepreneurial intentions of students post school and university.

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APPENDIX A

Dear <insert name>

As an established entrepreneur you fall within a band of 2.3% of the South African population. As a Wits Business School endeavour and as part of my MBA, we want to focus on the role of education and experience on the success of entrepreneurs in Gauteng. Specifically this survey is intended to determine how education levels and the types of experience that can improve entrepreneur earnings and what type of experience can boost earnings

You will remain completely anonymous. Your participation may help to improve entrepreneurial activity in South Africa, therefore, we ask for your help.

Thank you for taking the time to help in this research effort.

1. Please provide your name (Optional)

2. Please provide your age

3. Please indicate your gender

- [ ] Male
- [ ] Female

4. Please indicate your race

- [ ] White
- [ ] Black
- [ ] Coloured
- [ ] Indian
- [ ] Chinese
- [ ] Other, please specify

5. Please specify in which year the company was established

6. Are you the founder of the company?

- [ ] Yes
- [ ] No

7. Do you have an equity stake of at least 10%?

- [ ] Yes
- [ ] No

8. Do you partake in strategic management decisions?

- [ ] Yes
- [ ] No

9. In which sector does the business currently operate?

- [ ] Food Products
- [ ] Beverages & Tobacco
- [ ] Pharmaceuticals
- [ ] Health & Personal Care Products
- [ ] Leather/ Rubber/ Plastics Material & products
- [ ] Glass & Ceramics
- [ ] Metal Products: Ferrous
- [ ] Metal Products: Non Ferrous
- [ ] Forestry Products & Paper Furniture
- [ ] Specialty Chemicals
- [ ] Shipbuilding
- [ ] Automobiles
- [ ] Aerospace
- [ ] Industrial, Commercial
- [ ] Instruments, Control Devices, Medical
- [ ] Other, please specify

10. What was the employee headcount at the year-end in 2012?

11. What was the employee headcount at the year-end in 2014?

12. What was the percentage growth in sales from 2012 to 2014? (Sales at year-end in 2014 divided by sales at year end in 2012)

13. What was the percentage growth in assets from 2012 to 2014? (Assets at year-end in 2014 divided by assets at year end in 2012)

14. How would you describe your satisfaction with the company's sales from 2012 to 2014?

- [ ] Very dissatisfied
- [ ] Dissatisfied
- [ ] Neutral
- [ ] Satisfied
- [ ] Very satisfied

15. How would you describe your satisfaction with the company's profits from 2012 to 2014?

☐ Very dissatisfied

☐ Dissatisfied

☐ Neutral

☐ Satisfied

☐ Very satisfied

16. Given the performance of the business, how satisfied would you be to start this same business again?

☐ Very dissatisfied

☐ Dissatisfied

☐ Neutral

☐ Satisfied

☐ Very satisfied

17. How would you describe your overall personal satisfaction with the business from 2012 to 2014?

☐ Very dissatisfied

☐ Dissatisfied

☐ Neutral

☐ Satisfied

☐ Very satisfied

19. Do you agree with the following statements?

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
The failure rates for firms in my industry is high					
The industry is very risky such that one bad decision could threaten the viability of my business					
Competitive intensity is high in my industry					
Severe price wars are a characteristic of my industry					
Low profit margins are a characteristic of my industry					

20. Do you agree with the following statements?

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
Actions of competitors are generally easy to predict					
The set of competitors in my industry has remained constant over the last 3 years					
Product demand is easy to forecast					
Customer requirements/ preferences are easy to forecast					
My industry is stable with very little change resulting from major economic, technological, social or political forces					

21. Please indicate your highest level of education.

- [ ] Primary school (Grade 1 to 7)
- [ ] Secondary School (Grade 8 to 12)
- [ ] Post School Diploma
- [ ] Undergraduate degree
- [ ] Honours degree
- [ ] Masters degree
- [ ] PhD

22. How many years of working experience did you have prior to starting your business?

23. Is this your first business venture?

- [ ] Yes
- [ ] No

24. How many years of prior start-up experience do you have?

25. Please indicate if you started your business in the same field as your previous employ.

- [ ] Yes
- [ ] No

26. How many years of experience did you have with this specific employer?

APPENDIX B

Table 20 Means, Standard Deviations and Cronbach alphas for constructs

Construct	Questions	Omitted	Mean	SD	Cronbach Alpha	Reliability
Entrepreneur satisfaction	14, 15, 16, 17	None	3.37	.95	.90	Good
Environmental hostility	19a-e	None	3.38	.58	.69	Acceptable
Environmental dynamism	20a-e	None	2.26	.54	.73	Acceptable

Employee growth hierarchical regression

The REG Procedure
Model: MODEL1
Dependent Variable: Log_empgrowth

Number of Observations Read	108
Number of Observations Used	108

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	0.44933	0.04993	4.14	0.0002
Error	98	1.18257	0.01207		
Corrected Total	107	1.6319			

Root MSE	0.10985	R-Square	0.2753
Dependent Mean	0.03172	Adj R-Sq	0.2088
Coeff Var	346.35109		

Parameter Estimates							
Variable	DF	Parameter estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance inflation
Intercept	1	0.28516	0.12571	2.27	0.0255	0	0
Q2_Age	1	-0.00122	0.00122	-1	0.3188	-0.09053	1.10414
Q4White	1	-0.00393	0.02594	-0.15	0.8799	-0.01401	1.15653
Male	1	0.10957	0.0338	3.24	0.0016	0.29004	1.08235
log_firmage	1	-0.05737	0.03803	-1.51	0.1346	-0.1381	1.13343
Q9_Food	1	-0.03745	0.03862	-0.97	0.3346	-0.09214	1.22132
Q9_ConsumerGoods	1	-0.02497	0.03299	-0.76	0.4509	-0.07399	1.29209
Q9_Instruments	1	-0.10155	0.025	-4.06	<.0001	-0.40272	1.32966
Env_Hostility	1	-0.04898	0.01883	-2.6	0.0107	-0.23099	1.06623
Env_dynamism	1	-0.001	0.02065	-0.05	0.9613	-0.00442	1.11373

The REG Procedure
Model: MODEL2
Dependent Variable: Log_empgrowth

Number of Observations Read	108
Number of Observations Used	108

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	13	0.54003	0.04154	3.58	0.0001
Error	94	1.09187	0.01162		
Corrected Total	107	1.6319			

Root MSE	0.10778	R-Square	0.3309
Dependent Mean	0.03172	Adj R-Sq	0.2384
Coeff Var	339.81113		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.2482	0.13646	1.82	0.0721	0	0
Q2_Age	1	-0.00136	0.00121	-1.12	0.2649	-0.10056	1.12936
Q4White	1	0.00288	0.02566	0.11	0.9109	0.01027	1.17576
Male	1	0.07611	0.03595	2.12	0.0369	0.20147	1.2721
log_firmage	1	-0.0411	0.03922	-1.05	0.2974	-0.09894	1.2525
Q9_Food	1	-0.01139	0.03942	-0.29	0.7732	-0.02804	1.32178
Q9_ConsumerGoods	1	-0.01906	0.03302	-0.58	0.5652	-0.05646	1.34427
Q9_Instruments	1	-0.0997	0.025	-3.99	0.0001	-0.39539	1.38125
Env_Hostility	1	-0.0518	0.01971	-2.63	0.01	-0.24428	1.21378
Env_dynamism	1	0.00401	0.02052	0.2	0.8453	0.01764	1.14193
EntGoals_money	1	0.07543	0.04808	1.57	0.1201	0.29475	4.95949
EntGoals_Ownwork	1	-0.01182	0.0529	-0.22	0.8237	-0.03128	2.7548
EntGoals_independent	1	0.02846	0.04838	0.59	0.5577	0.10667	4.61812
EntGoals_other	1	0.01437	0.05274	0.27	0.7859	0.04152	3.26356

The REG Procedure
Model: MODEL3
Dependent Variable: Log_empgrowth

Number of Observations Read	108
Number of Observations Used	108

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	15	0.62959	0.04197	3.85	<.0001
Error	92	1.00231	0.01089		
Corrected Total	107	1.6319			

Root MSE	0.10438	**R-Square**	0.3858
Dependent Mean	0.03172	**Adj R-Sq**	0.2857
Coeff Var	329.0963		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardized Estimate**	**Variance Inflation**
Intercept	1	0.16289	0.14104	1.15	0.2511	0	0
Q2_Age	1	-0.0011	0.00125	-0.88	0.3799	-0.08148	1.27766
Q4White	1	0.00445	0.02522	0.18	0.8603	0.01587	1.211
Male	1	0.06019	0.03541	1.7	0.0925	0.15934	1.31616
log_firmage	1	-0.03954	0.03808	-1.04	0.3019	-0.09518	1.25882
Q9_Food	1	-0.02025	0.03833	-0.53	0.5986	-0.04982	1.33244
Q9_ConsumerGoods	1	-0.01584	0.032	-0.5	0.6218	-0.04693	1.34593
Q9_Instruments	1	-0.10363	0.02484	-4.17	<.0001	-0.41099	1.45329
Env_Hostility	1	-0.04579	0.01937	-2.36	0.0202	-0.21597	1.2498
Env_dynamism	1	0.00551	0.01989	0.28	0.7826	0.0242	1.14454
EntGoals_money	1	0.08976	0.04686	1.92	0.0585	0.35075	5.02114
EntGoals_Ownwork	1	-0.00469	0.05165	-0.09	0.9279	-0.0124	2.79977
EntGoals_independent	1	0.03696	0.04704	0.79	0.434	0.13851	4.65367
EntGoals_other	1	0.03116	0.05143	0.61	0.546	0.09006	3.30842
Dip_Deg	1	0.04968	0.03025	1.64	0.104	0.18454	1.89186
PostGrad	1	0.1103	0.03847	2.87	0.0051	0.30139	1.65527

The REG Procedure
Model: MODEL4
Dependent Variable: Log_empgrowth

Number of Observations Read	108
Number of Observations Used	108

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	18	0.65289	0.03627	3.3	<.0001
Error	89	0.97901	0.011		
Corrected Total	107	1.6319			

Root MSE	0.10488	**R-Square**	0.4001
Dependent Mean	0.03172	**Adj R-Sq**	0.2787
Coeff Var	330.68546		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.15916	0.18569	0.86	0.3937	0	0
Q2_Age	1	-0.00031465	0.00159	-0.2	0.8432	-0.02334	2.05284
Q4White	1	0.00426	0.02545	0.17	0.8675	0.01518	1.22109
Male	1	0.06392	0.03615	1.77	0.0804	0.16921	1.35849
log_firmage	1	-0.05643	0.04665	-1.21	0.2296	-0.13585	1.87091
Q9_Food	1	-0.02569	0.03974	-0.65	0.5196	-0.06322	1.41853
Q9_ConsumerGoods	1	-0.02419	0.03343	-0.72	0.4712	-0.07167	1.45556
Q9_Instruments	1	-0.09837	0.02637	-3.73	0.0003	-0.39012	1.62199
Env_Hostility	1	-0.04085	0.02033	-2.01	0.0476	-0.19263	1.36397
Env_dynamism	1	0.00673	0.02022	0.33	0.7401	0.02956	1.17045
EntGoals_money	1	0.10594	0.04946	2.14	0.0349	0.41397	5.54218
EntGoals_Ownwork	1	0.00378	0.05394	0.07	0.9443	0.01	3.02457
EntGoals_independent	1	0.0434	0.04893	0.89	0.3775	0.16264	4.98779
EntGoals_other	1	0.04241	0.05299	0.8	0.4257	0.12256	3.47978
Dip_Deg	1	0.05602	0.03119	1.8	0.0759	0.2081	1.99127
PostGrad	1	0.11125	0.04009	2.78	0.0067	0.30399	1.78012
Log_workexp	1	-0.07389	0.10219	-0.72	0.4716	-0.09813	2.73302
Log_startupexp	1	0.11181	0.10256	1.09	0.2786	0.10743	1.44063
Log_Relatedexp	1	-0.06819	0.09265	-0.74	0.4637	-0.08233	1.85645

Sales growth hierarchical regression

The REG Procedure
Model: MODEL1
Dependent Variable: Log_Sales

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	0.08409	0.00934	1.75	0.0883
Error	97	0.51838	0.00534		
Corrected Total	106	0.60247			

Root MSE	0.0731	R-Square	0.1396
Dependent Mean	0.09076	Adj R-Sq	0.0597
Coeff Var	80.54919		

Parameter Estimates							
Variable	DF	Paramete Estimate	Standard Error	t Value	Pr > |t|	Standardize Estimate	Variance Inflation
Intercept	1	0.14267	0.08372	1.7	0.0915	0	0
Q2_Age	1	-0.00083	0.00082817	-1	0.3188	-0.09906	1.10173
Q4White	1	0.00775	0.01723	0.45	0.6541	0.04427	1.09358
Male	1	-0.01874	0.02249	-0.83	0.4067	-0.08158	1.08069
log_firmage	1	-0.03364	0.02468	-1.36	0.1761	-0.13574	1.11856
Q9_Food	1	0.01242	0.02542	0.49	0.6262	0.05028	1.19341
Q9_ConsumerGoods	1	0.03608	0.02191	1.65	0.1029	0.17576	1.28478
Q9_Instruments	1	-0.01979	0.01681	-1.18	0.242	-0.12876	1.34884
Env_Hostility	1	-0.01022	0.0129	-0.79	0.4304	-0.07711	1.06912
Env_dynamism	1	0.02342	0.01426	1.64	0.1037	0.16244	1.1024

The REG Procedure
Model: MODEL2
Dependent Variable: Log_Sales

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	13	0.14876	0.01144	2.35	0.0094
Error	93	0.4537	0.00488		
Corrected Total	106	0.60247			

Root MSE	0.06985	**R-Square**	0.2469
Dependent Mean	0.09076	**Adj R-Sq**	0.1417
Coeff Var	76.9607		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardized Estimate**	**Variance Inflation**
Intercept	**1**	0.1078	0.08925	1.21	0.2302	0	0
Q2_Age	**1**	-0.00098393	0.0008011	-1.23	0.2225	-0.11745	1.12928
Q4White	**1**	0.01179	0.01674	0.7	0.483	0.06738	1.13043
Male	**1**	-0.04238	0.02379	-1.78	0.0781	-0.18452	1.32443
log_firmage	**1**	-0.02482	0.02494	-1	0.3222	-0.10015	1.25038
Q9_Food	**1**	0.02841	0.02518	1.13	0.2621	0.115	1.28274
Q9_ConsumerGoods	**1**	0.04248	0.02204	1.93	0.057	0.20696	1.42384
Q9_Instruments	**1**	-0.01689	0.01629	-1.04	0.3025	-0.10993	1.3886
Env_Hostility	**1**	-0.00921	0.01318	-0.7	0.4865	-0.06952	1.22274
Env_dynamism	**1**	0.02722	0.01386	1.96	0.0525	0.18879	1.1411
EntGoals_money	**1**	0.05845	0.03109	1.88	0.0633	0.37489	4.91222
EntGoals_Ownwork	**1**	-0.0222	0.03482	-0.64	0.5253	-0.09335	2.64788
EntGoals_independent	**1**	0.02589	0.03157	0.82	0.4144	0.16062	4.73972
EntGoals_other	**1**	0.02056	0.0347	0.59	0.5549	0.09241	3.00338

The REG Procedure
Model: MODEL3
Dependent Variable: Log_Sales

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	15	0.16675	0.01112	2.32	0.0075
Error	91	0.43571	0.00479		
Corrected Total	106	0.60247			

Root MSE	0.0692	**R-Square**	0.2768
Dependent Mean	0.09076	**Adj R-Sq**	0.1576
Coeff Var	76.24371		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardize Estimate**	**Variance Inflation**
Intercept	**1**	0.04533	0.09416	0.48	0.6314	0	0
Q2_Age	**1**	-0.00045037	0.00084409	-0.53	0.5949	-0.05376	1.27743
Q4White	**1**	0.00615	0.01695	0.36	0.7173	0.03518	1.18058
Male	**1**	-0.04204	0.02391	-1.76	0.082	-0.18305	1.36318
log_firmage	**1**	-0.0283	0.02479	-1.14	0.2567	-0.11418	1.25925
Q9_Food	**1**	0.02242	0.02514	0.89	0.3749	0.09073	1.3026
Q9_ConsumerGood	**1**	0.04347	0.02185	1.99	0.0497	0.2118	1.42619
Q9_Instruments	**1**	-0.02311	0.01649	-1.4	0.1645	-0.15039	1.44916
Env_Hostility	**1**	-0.00486	0.01326	-0.37	0.7145	-0.03671	1.2596
Env_dynamism	**1**	0.02689	0.01373	1.96	0.0533	0.18653	1.14162
EntGoals_money	**1**	0.06048	0.03101	1.95	0.0542	0.38794	4.97727
EntGoals_Ownwork	**1**	-0.01148	0.03494	-0.33	0.7433	-0.04826	2.71657
EntGoals_independ	**1**	0.03354	0.03154	1.06	0.2904	0.20809	4.81822
EntGoals_other	**1**	0.02746	0.03476	0.79	0.4316	0.12342	3.07149
Dip_Deg	**1**	0.03755	0.01962	1.91	0.0588	0.22915	1.80413
PostGrad	**1**	0.01907	0.02568	0.74	0.4597	0.08302	1.57314

The REG Procedure
Model: MODEL4
Dependent Variable: Log_Sales

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	18	0.18121	0.01007	2.1	0.0119
Error	88	0.42125	0.00479		
Corrected Total	106	0.60247			

Root MSE	0.06919	**R-Square**	0.3008
Dependent Mean	0.09076	**Adj R-Sq**	0.1578
Coeff Var	76.23471		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.02617	0.12739	0.21	0.8377	0	0
Q2_Age	1	0.00002861	0.00105	0.03	0.9782	0.00342	1.96142
Q4White	1	0.00751	0.01697	0.44	0.6593	0.04291	1.18424
Male	1	-0.04005	0.02439	-1.64	0.1041	-0.17437	1.4188
log_firmage	1	-0.03556	0.03054	-1.16	0.2475	-0.14348	1.91147
Q9_Food	1	0.01878	0.02597	0.72	0.4715	0.07601	1.3904
Q9_ConsumerGoods	1	0.03875	0.02268	1.71	0.091	0.18878	1.53598
Q9_Instruments	1	-0.0157	0.0173	-0.91	0.3667	-0.10217	1.59553
Env_Hostility	1	-0.00185	0.0137	-0.14	0.8927	-0.01399	1.34621
Env_dynamism	1	0.03027	0.01415	2.14	0.0352	0.20996	1.21238
EntGoals_money	1	0.07222	0.03245	2.23	0.0286	0.46319	5.45201
EntGoals_Ownwork	1	-0.00346	0.03595	-0.1	0.9235	-0.01456	2.87717
EntGoals_independent	1	0.03849	0.03255	1.18	0.2403	0.23881	5.13492
EntGoals_other	1	0.0336	0.03555	0.95	0.3472	0.15098	3.2121
Dip_Deg	1	0.04343	0.02011	2.16	0.0335	0.26497	1.89435
PostGrad	1	0.01746	0.02667	0.65	0.5143	0.07601	1.69634
Log_workexp	1	-0.01622	0.0691	-0.23	0.8149	-0.03507	2.80742
Log_startupexp	1	0.07463	0.07107	1.05	0.2965	0.11414	1.48696
Log_Relatedexp	1	-0.08038	0.06229	-1.29	0.2003	-0.15937	1.91933

Assets growth hierarchical regression

The REG Procedure
Model: MODEL1
Dependent Variable: Log_Assetsgrowth

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	0.01961	0.00218	2.18	0.03
Error	97	0.09706	0.001		
Corrected Total	106	0.11667			

Root MSE	0.03163	R-Square	0.1681
Dependent Mean	0.03475	Adj R-Sq	0.0909
Coeff Var	91.03302		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.052	0.03615	1.44	0.1536	0	0
Q2_Age	1	-0.0004303	0.0003567	-1.21	0.2307	-0.11839	1.12342
Q4White	1	0.00749	0.00742	1.01	0.3155	0.0985	1.1111
Male	1	-0.00181	0.00987	-0.18	0.8546	-0.01794	1.11269
log_firmage	1	-0.00961	0.01068	-0.9	0.3707	-0.08829	1.12391
Q9_Food	1	-0.00551	0.01156	-0.48	0.6348	-0.04856	1.21143
Q9_ConsumerGoods	1	0.0082	0.00923	0.89	0.3763	0.09293	1.27477
Q9_Instruments	1	-0.02112	0.00725	-2.91	0.0045	-0.31236	1.3415
Env_Hostility	1	0.00536	0.00537	1	0.3204	0.09472	1.04862
Env_dynamism	1	0.0002741	0.00594	0.05	0.9633	0.00453	1.12507

The REG Procedure
Model: MODEL2
Dependent Variable: Log_Assetsgrowth

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	13	0.02163	0.00166	1.63	0.0913
Error	93	0.09504	0.00102		
Corrected Total	106	0.11667			

Root MSE	0.03197	**R-Square**	0.1854
Dependent Mean	0.03475	**Adj R-Sq**	0.0715
Coeff Var	92.00043		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardized Estimate**	**Variance Inflation**
Intercept	1	0.04386	0.04031	1.09	0.2794	0	0
Q2_Age	1	-0.0004133	0.00036442	-1.13	0.2596	-0.11373	1.14787
Q4White	1	0.00746	0.0076	0.98	0.3292	0.0981	1.14208
Male	1	-0.00522	0.01097	-0.48	0.6353	-0.05163	1.34372
log_firmage	1	-0.00876	0.01134	-0.77	0.4417	-0.08052	1.23993
Q9_Food	1	-0.00343	0.01207	-0.28	0.7768	-0.03025	1.29218
Q9_ConsumerGoods	1	0.00874	0.00965	0.91	0.3673	0.09902	1.36404
Q9_Instruments	1	-0.02097	0.00747	-2.81	0.0061	-0.3101	1.3924
Env_Hostility	1	0.00563	0.00581	0.97	0.3353	0.09943	1.20334
Env_dynamism	1	0.00137	0.00607	0.23	0.8217	0.02267	1.14909
EntGoals_money	1	0.00711	0.01401	0.51	0.613	0.10303	4.70435
EntGoals_Ownwork	1	-0.00705	0.01571	-0.45	0.6548	-0.06733	2.57315
EntGoals_independent	1	0.00665	0.01403	0.47	0.6364	0.09307	4.39559
EntGoals_other	1	0.00459	0.01538	0.3	0.7662	0.04955	3.15147

The REG Procedure
Model: MODEL3
Dependent Variable: Log_Assetsgrowth

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	15	0.0222	0.00148	1.43	0.1524
Error	91	0.09447	0.00104		
Corrected Total	106	0.11667			

Root MSE	0.032	**R-Square**	0.1903
Dependent Mean	0.035	**Adj R-Sq**	0.0568
Coeff Var	92.73		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.03431	0.04294	0.8	0.4263	0	0
Q2_Age	1	-0.0003504	0.00038746	-0.9	0.3682	-0.09642	1.27744
Q4White	1	0.00714	0.00776	0.92	0.3597	0.09398	1.17112
Male	1	-0.00604	0.01124	-0.54	0.5923	-0.05974	1.38891
log_firmage	1	-0.00894	0.01146	-0.78	0.4371	-0.08217	1.24532
Q9_Food	1	-0.00403	0.0122	-0.33	0.7415	-0.03557	1.29884
Q9_ConsumerGoods	1	0.00887	0.00973	0.91	0.3641	0.1005	1.36449
Q9_Instruments	1	-0.0217	0.00765	-2.83	0.0056	-0.3209	1.43999
Env_Hostility	1	0.00624	0.00592	1.05	0.2947	0.11028	1.23034
Env_dynamism	1	0.00129	0.00614	0.21	0.8344	0.02127	1.1564
EntGoals_money	1	0.00815	0.01424	0.57	0.5684	0.11817	4.78753
EntGoals_Ownwork	1	-0.00577	0.01602	-0.36	0.7195	-0.05513	2.63237
EntGoals_independent	1	0.00786	0.01424	0.55	0.5821	0.10999	4.45704
EntGoals_other	1	0.00595	0.01562	0.38	0.7044	0.06421	3.19778
Dip_Deg	1	0.00592	0.00905	0.65	0.5149	0.08127	1.73647
PostGrad	1	0.00789	0.01225	0.64	0.521	0.07543	1.54033

The REG Procedure
Model: MODEL4
Dependent Variable: Log_Assetsgrowth

Number of Observations Read	107
Number of Observations Used	107

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	18	0.02884	0.0016	1.61	0.0759
Error	88	0.08783	0.00099806		
Corrected Total	106	0.11667			

Root MSE	0.032	R-Square	0.2472
Dependent Mean	0.035	Adj R-Sq	0.0932
Coeff Var	90.92		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	0.01268	0.05732	0.22	0.8255	0	0
Q2_Age	1	-0.00007211	0.00047853	-0.15	0.8806	-0.01984	2.02669
Q4White	1	0.00836	0.00765	1.09	0.2775	0.11	1.18475
Male	1	-0.00485	0.01125	-0.43	0.6678	-0.04794	1.44892
log_firmage	1	-0.01289	0.01391	-0.93	0.3567	-0.11841	1.90933
Q9_Food	1	-0.00733	0.0124	-0.59	0.556	-0.06461	1.39674
Q9_ConsumerGoods	1	0.00626	0.00993	0.63	0.5298	0.07095	1.47876
Q9_Instruments	1	-0.01678	0.00791	-2.12	0.0367	-0.24809	1.59783
Env_Hostility	1	0.00853	0.00607	1.41	0.1631	0.15072	1.34257
Env_dynamism	1	0.00298	0.00608	0.49	0.6255	0.04922	1.18035
EntGoals_money	1	0.01665	0.01472	1.13	0.2613	0.24123	5.3226
EntGoals_Ownwork	1	-0.0006579	0.01621	-0.04	0.9677	-0.00629	2.80545
EntGoals_independent	1	0.01058	0.01444	0.73	0.4659	0.14795	4.77096
EntGoals_other	1	0.01051	0.01569	0.67	0.5048	0.11346	3.35568
Dip_Deg	1	0.00963	0.00909	1.06	0.2926	0.13223	1.82331
PostGrad	1	0.00829	0.0124	0.67	0.5056	0.07922	1.64195
Log_workexp	1	-0.01138	0.03115	-0.37	0.7157	-0.05591	2.73695
Log_startupexp	1	0.05825	0.03256	1.79	0.077	0.19837	1.43669
Log_Relatedexp	1	0.05165	0.02865	-1.8	0.0748	0.23258	1.94529

Entrepreneur satisfaction hierarchical regression

The REG Procedure
Model: MODEL1
Dependent Variable: Ent_satisfaction

Number of Observations Read	110
Number of Observations Used	110

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	9	19.23783	2.13754	2.9	0.0043
Error	100	73.6849	0.73685		
Corrected Total	109	92.92273			

Root MSE	0.8584	**R-Square**	0.207
Dependent Mean	3.39545	**Adj R-Sq**	0.1357
Coeff Var	25.28083		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardized Estimate**	**Variance Inflation**
Intercept	**1**	5.07169	0.83289	6.09	<.0001	0	0
Q2_Age	**1**	-0.0063	0.00954	-0.66	0.5102	-0.06125	1.08302
Q4White	**1**	0.24466	0.19887	1.23	0.2215	0.11456	1.0935
Male	**1**	0.01754	0.25305	0.07	0.9449	0.00636	1.06182
log_firmage	**1**	-0.74944	0.28952	-2.59	0.0111	-0.24401	1.12057
Q9_Food	**1**	0.29896	0.28812	1.04	0.3019	0.10141	1.20439
Q9_ConsumerGoods	**1**	0.06831	0.25563	0.27	0.7898	0.02687	1.27465
Q9_Instruments	**1**	-0.5505	0.19413	-2.84	0.0055	-0.29226	1.3396
Env_Hostility	**1**	-0.19148	0.14976	-1.28	0.204	-0.11721	1.05971
Env_dynamism	**1**	0.06333	0.15887	0.4	0.691	0.03724	1.10069

The REG Procedure
Model: MODEL2
Dependent Variable: Ent_satisfaction

Number of Observations Read	110
Number of Observations Used	110

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	13	23.63546	1.81811	2.52	0.0051
Error	96	69.28727	0.72174		
Corrected Total	109	92.92273			

Root MSE	0.8	**R-Square**	0.2544
Dependent Mean	3.4	**Adj R-Sq**	0.1534
Coeff Var	25		

Parameter Estimates							
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**	**Standardized Estimate**	**Variance Inflation**
Intercept	**1**	4.65406	0.92051	5.06	<.0001	0	0
Q2_Age	**1**	-0.00643	0.00952	-0.68	0.501	-0.06248	1.10172
Q4White	**1**	0.2655	0.19876	1.34	0.1848	0.12432	1.11517
Male	**1**	-0.25034	0.27657	-0.91	0.3677	-0.09077	1.29489
log_firmage	**1**	-0.60872	0.30056	-2.03	0.0456	-0.1982	1.23301
Q9_Food	**1**	0.35112	0.29553	1.19	0.2377	0.1191	1.29375
Q9_ConsumerGoods	**1**	0.20192	0.26507	0.76	0.4481	0.07941	1.39919
Q9_Instruments	**1**	-0.57448	0.19611	-2.93	0.0042	-0.30499	1.39566
Env_Hostility	**1**	-0.1897	0.16	-1.19	0.2387	-0.11611	1.23479
Env_dynamism	**1**	0.04038	0.15931	0.25	0.8005	0.02374	1.12992
EntGoals_money	**1**	0.66677	0.37468	1.78	0.0783	0.34704	4.89632
EntGoals_Ownwork	**1**	0.25173	0.4116	0.61	0.5423	0.08842	2.69092
EntGoals_independent	**1**	0.66055	0.38087	1.73	0.0861	0.33212	4.72141
EntGoals_other	**1**	0.26206	0.41566	0.63	0.5299	0.10052	3.273

The REG Procedure
Model: MODEL3
Dependent Variable: Ent_satisfaction

Number of Observations Read	110
Number of Observations Used	110

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	15	24.01337	1.60089	2.18	0.012
Error	94	68.90936	0.73308		
Corrected Total	109	92.92273			

Root MSE	0.8562	**R-Square**	0.2584
Dependent Mean	3.39545	**Adj R-Sq**	0.1401
Coeff Var	25.21606		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	4.87484	1.02079	4.78	<.0001	0	0
Q2_Age	1	-0.00854	0.0101	-0.85	0.3998	-0.08302	1.22131
Q4White	1	0.29155	0.20362	1.43	0.1555	0.13651	1.1522
Male	1	-0.27901	0.28401	-0.98	0.3284	-0.10117	1.34441
log_firmage	1	-0.5922	0.30379	-1.95	0.0542	-0.19282	1.24014
Q9_Food	1	0.35963	0.29977	1.2	0.2333	0.12198	1.31052
Q9_ConsumerGoods	1	0.20162	0.26746	0.75	0.4528	0.07929	1.40252
Q9_Instruments	1	-0.54791	0.20169	-2.72	0.0079	-0.29088	1.45333
Env_Hostility	1	-0.20197	0.16358	-1.23	0.22	-0.12362	1.27083
Env_dynamism	1	0.03233	0.16097	0.2	0.8412	0.01901	1.13579
EntGoals_money	1	0.67978	0.38037	1.79	0.0771	0.35381	4.96811
EntGoals_Ownwork	1	0.2176	0.41911	0.52	0.6048	0.07643	2.74687
EntGoals_independent	1	0.64301	0.3868	1.66	0.0998	0.3233	4.79432
EntGoals_other	1	0.25965	0.42248	0.61	0.5403	0.0996	3.32905
Dip_Deg	1	-0.11667	0.24018	-0.49	0.6283	-0.05817	1.81773
PostGrad	1	0.05504	0.31069	0.18	0.8598	0.01996	1.60879

The REG Procedure
Model: MODEL4
Dependent Variable: Ent_satisfaction

Number of Observations Read	110
Number of Observations Used	110

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	18	25.00519	1.38918	1.86	0.0294
Error	91	67.91754	0.74635		
Corrected Total	109	92.92273			

Root MSE	0.86391	R-Square	0.2691
Dependent Mean	3.39545	Adj R-Sq	0.1245
Coeff Var	25.4432		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Variance Inflation
Intercept	1	5.97423	1.42407	4.2	<.0001	0	0
Q2_Age	1	-0.0013	0.01282	-0.1	0.9194	-0.01265	1.93426
Q4White	1	0.3087	0.20643	1.5	0.1383	0.14454	1.16323
Male	1	-0.25728	0.29046	-0.89	0.3781	-0.09329	1.38118
log_firmage	1	-0.79919	0.37705	-2.12	0.0368	-0.26021	1.87643
Q9_Food	1	0.27685	0.31097	0.89	0.3757	0.09391	1.38518
Q9_ConsumerGoods	1	0.13449	0.27983	0.48	0.6319	0.05289	1.50798
Q9_Instruments	1	-0.53572	0.21407	-2.5	0.0141	-0.28441	1.60809
Env_Hostility	1	-0.15427	0.1709	-0.9	0.3691	-0.09443	1.36245
Env_dynamism	1	0.02766	0.16463	0.17	0.8669	0.01627	1.16695
EntGoals_money	1	0.80149	0.40239	1.99	0.0494	0.41716	5.46105
EntGoals_Ownwork	1	0.35487	0.43938	0.81	0.4214	0.12464	2.96529
EntGoals_independent	1	0.76699	0.40484	1.89	0.0613	0.38564	5.15854
EntGoals_other	1	0.35036	0.4355	0.8	0.4232	0.13439	3.47451
Dip_Deg	1	-0.06367	0.24795	-0.26	0.7979	-0.03174	1.90278
PostGrad	1	0.13396	0.32344	0.41	0.6797	0.04857	1.71256
Log_workexp	1	-0.32545	0.83534	-0.39	0.6977	-0.05723	2.68597
Log_startupexp	1	-0.437	0.84045	-0.52	0.6044	-0.05594	1.44124
Log_Relatedexp	1	-0.55972	0.75841	-0.74	0.4624	-0.08993	1.84872