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**The Impact of Education on an Entrepreneur's Environmental Scanning Activities in
Growing their Business**

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ABSTRACT

This research project investigated the impact of education on an entrepreneur's opportunity and threat identification skills through the environmental scanning activities and modes that the entrepreneur adopted. The aim of the research was to identify the types and levels of education which entrepreneurs should have in order that they can scan their environments effectively and achieve high growth rates.

South Africa, like other developing countries, has a dire need to address poverty. Entrepreneurship is seen as a vehicle for poverty alleviation and socio-economic empowerment (Schlemer & Hudson, 2004) and a means of enhancing South Africa's global competitiveness (Rogerson, 2004). The research was conducted with a view that it would contribute to the lessons of how to achieve entrepreneurial success.

The study was conducted using quantitative research methodology. The target population was entrepreneurs in South Africa, within the Information Technology, Construction and Advertising industries.

The study found that entrepreneurs with a secondary education scanned less effectively than entrepreneurs with tertiary qualifications. This finding is synonymous with low-income countries where there is pressure to develop businesses. The research also found that entrepreneurs with a science background scanned the environment more than entrepreneurs with other qualifications and achieved higher revenue growth levels than other entrepreneurs.

KEYWORDS

Environmental scanning, Education, Entrepreneurship, Revenue growth

DECLARATION

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

Siziwe Dube (Ngwenya)

Date

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1. DEFINITION OF THE RESEARCH PROBLEM

1.1 Introduction

The positive relationship between education and business success is empirically well-established (Rauch, Frese & Utsh, 2000). Researchers agree that education leads to knowledge and skills that enable business owners to find opportunities and to cope with problems better and to be more successful (Cooper, Gimeno-Gascon, & Woo, 1994).

Small businesses are a major source of employment and income in many countries in the developing world (Mead & Liedholm, 1998). It is widely recognised that small businesses contribute to the development of the economies in these countries. Policy makers specifically see a large potential in increasing and improving small business activities in South Africa. Following the legacy of the apartheid regime, South Africa has performed more poorly on a number of small business indicators than most developing countries – despite favourable economic conditions (Maas & Herrington, 2006). Results from six years of Global Entrepreneurship Monitor (GEM) research identified low education and lack of knowledge and entrepreneurial skills as the main limiting factors for small business activity in South Africa (Maas & Herrington, 2006).

1.2 The Research Problem

Previous research has shown a direct relationship between education and business success (Rauch et al, 2000). This research report aims to identify some of the mechanisms that explain why education and business success are linked. The mechanism

examined in this research is that of environmental scanning. This mechanism is being considered because environmental conditions facing today's businesses increasingly are fraught with complexity, turbulence, and uncertainty (McGee & Sawyerr, 2003). "In order to prosper under such conditions organizations must find new ways to adapt" (McGee & Sawyerr, 2003:385).

Formal education is seen as providing the necessary cognitive skills to scan the environment the business is operating in. Education is viewed as a type of credential that indicates a greater productivity (Arrow, 1973; Spence, 1974) cited in McGee and Sawyerr (2003). There is therefore a direct relationship between education and the level of productivity that one may have in achieving business success, thus the need for this study.

1.3 Research Objectives

The objective of this report is to establish the role that the type and level of education would have on the environmental scanning activities an entrepreneur would adopt in growing their business. The fundamental question this research aims to answer is: "Do the level and types of education have an impact on an entrepreneur's environmental scanning activities?"

The main objectives of the research will be:

- **Objective1:** To determine if level of education is positively related to environmental scanning activity.
- **Objective2:** To determine if type of education is positively related to environmental scanning activity.
- **Objective 3:** To explore whether level of education is positively related to environmental scanning mode.
- **Objective 4:** To explore whether type of education is positively related to environmental scanning mode.
- **Objective 5:** To explore whether level of education is positively related to business growth.
- **Objective 6:** To explore whether type of education is positively related to business growth.
- **Objective 7:** To determine if environmental scanning activities are positively related to business growth.
- **Objective 8:** To determine if environmental scanning modes are positively related to business growth.

1.4 Relevance of this Research to South Africa

This research was conducted in South Africa, and is therefore relevant for the South African environment. Entrepreneurship is important for employment creation in South Africa. Small businesses accounted for over 40% of GDP in 2002 and provided approximately 57% of jobs (Statistics South Africa, 2007), making the growth of small

businesses critically important, given the current unemployment rate of an estimated 40% (World Bank, 2007). Coupled with this, entrepreneurship is seen as a vehicle for poverty alleviation and socio-economic empowerment (Schlemer and Hudson, 2004) and a means of enhancing South Africa's global competitiveness (Rogerson, 2004). These factors make entrepreneurship in South Africa particularly significant to economic development and social development, thereby making it a very important study.

Through studying the factors that positively influence the growth of entrepreneurship in South Africa, the government will be better equipped to address the challenges that affect entrepreneurship. This study will examine in detail the impact of education on environmental scanning aimed at identifying entrepreneurial opportunities and threats. This will help identify ways in which the government can focus its support functions for Small Medium Enterprises.

There is a growing need to increase entrepreneurial activity in South Africa, given that the economic contribution of South Africa's entrepreneurial sector is well below the developing country norm (Orford, Wood, Herrington, Shay, Hudson and Goldstuck, 2004) and has shown little improvement since 2001 (Maas & Herrington, 2006). The Global Entrepreneurship Monitor (GEM) reports that South Africa's entrepreneurial environment is generally mediocre to low (Herrington, Kew and Kew, 2008) and is reported as having a Total Entrepreneurial Activity (TEX) index of a low 5.3%, which is below the developing country average of 14% (Maas & Herrington, 2006). As basis of comparison, Uganda has a TEX of 32% and yet it is substantially smaller than South Africa (Acs, Arenius, Hay & Minniti, 2004).

1.5 Motivation for the Research

This research studies the impact of education on an entrepreneur's opportunity identification skills. The motivation for this research is therefore to identify the types of education and at what levels they should be offered to students to equip them with entrepreneurial tools. Through the identification of these factors, a framework could be developed for educational institutions on the type of curriculum to follow.

Further, this research will identify the importance of environmental scanning through identifying the relationship between the growth of a business and opportunity identification. The conclusions on this relationship, if positive, may affirm the role of scanning the environment in managing one's business. Through the various programs that the South African government has initiated, this aspect of managing a business can be communicated to entrepreneurs and training sessions provided to entrepreneurs.

1.6 Research Scope

This research is based on studies conducted by international authors. Since no published study could be located which considered the objectives of this research in a South African context, the scope of this study is South Africa. The difference with other literature is that this study is focused on South African entrepreneurial companies between the ages of two and 10 years, which are still being run by the founder.

Sector Selection

In line with the fact that different industries have different operational qualities, this study has been confined to three sectors of the industry within South Africa, namely

Information Technology, Advertising and Construction. The choice in industry is due to the snow-ball sampling method which was conducted for ease of accessibility.

1.7 Summary

This chapter provides an introduction to the research study, highlighting the research problem, the motivation for conducting this research and the scope of the research. In summary the research aims to examine the role that education plays in the management of an entrepreneur's business from a South African perspective.

The next chapter presents a review of the literature associated with the focus of this research study.

2. LITERATURE REVIEW

2.1 Introduction

The literature review will examine the role played by education and environmental scanning on how an entrepreneur manages their business. The theory reviewed in this section is broken into three sections: entrepreneurship, education and environmental scanning activities. Education is explored in two broad categories: the level of education and the type of education, and how it plays a role in the success of an organisation. Environmental scanning is explored under the following categories: environmental scanning activities and environmental scanning modes and how they have a direct relationship with organisational growth through attaining competitive advantage.

2.2 Definition of Entrepreneurs

The word entrepreneur is French (*entreprendre*) meaning “beginner” or “undertaker”. Schumpeter (1969), a German economist, defined an entrepreneur as one who does new things, or does things that he is doing now in a new way regardless of what field he is in. He also stressed that what separates entrepreneurs from ordinary people is their ability to overstep the boundaries of routine, both in vision and action, without fear of failing. Entrepreneurs are described as creative, innovative, visionary and persistent individuals “who operate at the edge of their competence” (Kanter, 1983:36).

The research is focused on how entrepreneurs scan their environments as opposed to how managers scan their environments. Previous literature has already proven that entrepreneurially oriented managers are more likely than conservatively oriented managers to scan their environment for potential new opportunities or challenges that may impact the organisation's market position (Jogarathnam, 2005). Entrepreneurial behaviour can therefore be used by large long-established organisations to create wealth through the effective identification of opportunities and threats (Jogarathnam, 2005).

2.3 Environmental Scanning

2.3.1 Introduction

Entrepreneurs today face unprecedented challenges in maintaining commercial survival and success (Albright, 2004). Environmental scanning is one tool in an organisation's arsenal that can be used to gain a strategic understanding of external influences in order to respond in ways that will ensure the organisation's survival and success (Albright, 2004). Thus environmental scanning focuses on the identification of emerging issues, situations, and potential pitfalls that may affect an organisation's future.

Wei Choo (1999) argued that environmental scanning casts a wide net for gathering and analysing information about the external environment in a way that can assist management to plan for the venture's future. Thus scanning covers various stakeholders, for example suppliers, competitors and customers, and also includes the

technological environment, economic conditions, political and regulatory environment as well as social and demographic trends.

Greve and Salaff (2003) argued that the resources individuals obtain through their relationships with others appear to be positively associated with entrepreneurial success. In developing countries, entrepreneurs emphasize networking with each other for mutual support and exchange of services and information (McDade & Spring, 2005). Entrepreneurs can scan the environment through social networks which are rich in information and advice (Jack & Anderson, 2003). These social networks can also assist the entrepreneur in identifying viable opportunities (Hite, 2005). Social skills and how an individual interacts with others may have a powerful influence on the entrepreneur's ability to scan the environment and identify the right resources (Baron & Markman, 2000).

2.3.2 Characteristics of a Comprehensive Environmental Scanning Process

The environment was defined by Duncan (1972) and cited in Daft, Sormunen & Parks(1988)as “the relevant physical and social factors outside the boundary of an organisation that are taken into consideration during organisational decision-making”. A comprehensive environmental scanning process will keep a watchful eye on the potential impacts of the following different environments:

Industry/Markets: This entails examining the structure of the industry on an on-going basis and identifying the key competition in the industry. Understanding the role of the competitors in the market and their relationship with each other, their customers, and their suppliers will provide useful information on trends and potential problems for competing organisations (Albright, 2004).

Technology: It is important to monitor changes in technologies, particularly those that influence business efficiencies, changes in production, existing structures (for example, energy sources and costs, transportation and communication). The rise of new products or services also has an impact on an organisation, and signals the need for change (Albright, 2004).

Regulatory: Changes in law and regulatory guidelines have an impact on the organisation. For example, laws regarding minimum wage can have a direct impact on the hiring practices in an organisation; laws regarding communications media may have a dramatic effect on the number of radio stations an individual media house may have, thereby potentially affecting the market structure and an organisation's market share (Albright, 2004).

Economic: Economic information can help an organisation prepare for changes in for example: inflation, interest rates, unemployment levels, exchange rates and gross national product of trading nations.

Social: Demographic shifts in the population may cause an increase or demand for a given product or service. Therefore demographic information should be monitored constantly for changes in size and distribution, age, education and income distribution. Consumer behaviour should also be monitored.

Political: It is important for an organisation to have a clear understanding of the political landscape in which it is operating so that it can be prepared for sudden changes that result from elections or changes in policies or laws. Examples of political influences on organisations are restrictions in trade flows, which may affect the operational level of an organisation.

2.3.3 Environmental Scanning Activities

Beal (2000) contends that environmental scanning activities are positively related to the competitive strategic alignment of a firm. Zahra, Neunaum & El-Hagrassey (2002) argue that effective competitive analysis is important for success in today's markets. Zahra et al (2002) further argue that competitive analysis activities are positively associated with venture performance. Competitive strategy is achieved through the following dimensions (Beal, 2000):

- **Innovation differentiation** involves the production and marketing of new products with unique features);
- **Marketing differentiation** creates perceptions in the minds of targeted customers that the firm's products are distinctively different from those of competitors;

- **Low cost leadership** reduces costs throughout the firm, to secure a low-cost position within the market;
- **Quality differentiation** emphasises superiority in reliability and durability;
- **Service differentiation** emphasises customer service before, during and after purchase.

An increase in the above dimensions will increase venture performance (Beal, 2000). The increase is directly related to the activities of scanning. Activities refer to the act of scanning, and are associated with the timeliness, relevancy, and amount of information that firms are able to obtain about various sectors, namely: customers, suppliers and competitors (Daft et al, 1988).

The activities of scanning environmental sectors, provides the firm with current information and the ability to adapt to changing environmental conditions more rapidly than not scanning (Beal, 2000). Environmental scanning activities also position the firm to stay abreast of environmental events and trends that threaten its existence or offer opportunities to exploit (Beal, 2000).

Beal (2000) contended that frequently scanning the environment is positively related to the competitive strategy of a firm. For example, obtaining and analysing information on competitors lowering or raising its product prices may enable a firm to formulate and implement strategic actions to maintain current customers or secure additional ones. By achieving a good competitive strategy, the firm is more likely to achieve growth.

Burton (2008) argued that an effective competitor analysis system is more beneficial for corporate than for individual ventures. Corporate ventures usually target broad market segments which have diverse customers and different competitors. Individual ventures typically pursue more narrowly focused markets. Thus the size of the venture will most likely influence the activities of scanning.

2.3.4 Environmental Scanning Modes

“Given the overwhelming nature of information available, managers should adopt a systematic approach to scanning, study external sectors carefully, and identify what information is needed to make intelligent decisions” (Jogarathnam, 2005, p.14). Wei Choo (1999) described environmental scanning as an activity that includes both looking at information (viewing) and looking for information (searching) and that there are four modes of scanning:

Undirected Viewing:

The individual is exposed to information with no specific informational need in mind. The goal is to scan broadly in order to detect signals of change early. Many and varied sources of information are used, and large amounts of information are scanned. Undirected viewing helps the organisation to scan broadly and develop peripheral vision so that it can see and think “outside the box” (Wei Choo, 1999).

Conditioned Viewing:

The individual directs viewing to information about selected topics or to certain types of information. The goal is to evaluate the significance of the information encountered in order to assess the general nature of the impact on the organisation (Wei Choo, 1999). Conditioned viewing tracks trends and gives the organisation early warning about emerging issues.

Formal Search

The individual makes a deliberate or planned effort to obtain specific information or information about specific information or information about a specific issue. Search is formal because it is structured to some pre-established procedure or methodology. The granularity of information is fine, as search is relatively focused to find detailed information. The goal is to systematically retrieve information relevant to an issue in order to provide a basis for developing a decision or course of action (Wei Choo, 1999).

Formal searches should be a part of competitor intelligence gathering (process where companies try to establish a better product offering than competing products); patent searching and market analysis, among other activities. Formal searches prefer information from sources that are perceived to be knowledgeable or from information sources that make efforts to ensure data quality and accuracy (Wei Choo, 1999). Daft et al (1988) contended that a formal search involves impersonal sources of information. Wei Choo (1999) contended that, in order to be effective, the environmental scanning

needs to engage all four modes of viewing and searching in the following order: 1. Undirected viewing, 2. Conditioned, 3. Viewing, 4. Informal search, 5. Formal search.

A question raised in the literature is whether formal or informal sources are better suited for scanning purposes. In a study of chief executive scanning, Daft *et al* (1988) found that both formal and informal sources were valuable and that the use of all sources increased as strategic uncertainty increased, suggesting that multiple sources are the appropriate system for a chief executive. This may or may not apply to entrepreneurs, thus this research.

2.4 The Role of Education

2.4.1 Introduction

The role of education in entrepreneurship development has been researched widely, and thus is the backbone on which this research has been based. Earlier studies have suggested that, before being able to contribute a significant insight to a field, an individual must first have substantial preparation in that field, and have built significant reservoirs of discipline-relevant information (Simonton, 1999a, 1999b). Therefore, the more knowledge individuals possess in a particular domain, the more likely they are to understand the nature of the relationships between different ideas. On the other hand extensive training in a particular field can impede cognitive insight (Simonton, 1999a, 1999b).

The lack of appropriate training is argued to be the main reason for entrepreneurial failure in South Africa. Studies have shown that university education is correlated with high rates of new firm creation (Acs & Kallas, 2007). Acs and Kallas (2007) further suggested that in developing countries, entrepreneurs who start businesses without the requisite skills, education, financial capital and social contacts, usually fail. The effectiveness of cognitive institutions that make up a country's education system have been shown to have a positive impact on entrepreneurial activities (Spence & Gomez, 2004). Gnyawali and Fogel (1994) suggested that every 1% increase in university graduates leads to a 1.2% increase in jobs created by Small Medium Enterprises.

As evidenced from the above discussion, education plays a key role in entrepreneurial activity. However, the question is whether education impacts the environmental scanning abilities of an entrepreneur. Is environmental scanning an innate quality that an entrepreneur should have, or is it teachable?

2.4.2 The Type of Education

In an article in the Journal of Economics & Management Strategy by Baumol, Schilling and Wolff (2009), the writers argued that standard education approaches, particularly those that are most rigorous and technical, tend to impede rather than nurture innovative entrepreneurship by constraining heterodox thinking and exercise of the imagination. They also argued that innovative entrepreneurs require some special skills and even particular types of education. But no one seems to be sure which types of

education will most effectively prepare those innovators, unlike replicative entrepreneurs, whose educational requirements seem relatively clear-cut.

Work on the “marginal man” argues that marginal intellectuals (those who may participate in multiple intellectual domains but are central to none) are more likely to introduce creative breakthroughs than well-established experts in a domain (Ben-David & Collins, 1966; Edge & Mulky, 1976; Dogan & Pahre, 1990; Martindale, 1995; McLaughlin, 2001).

This study therefore aims to establish the existence of a relationship between the type of education an entrepreneur has, and the environmental scanning activities they adopt in growing their business.

2.4.3 The Level of Education

McGee and Sawyerr (2003) contended that small firms in the high-technology sector typically lack the infrastructure necessary to collect adequately the information needed to cope with dynamic, highly uncertain environments. This infers that an educated entrepreneur will be more adept at collecting some of the information despite the lack of infrastructure challenge.

The impact of the different levels of education on an entrepreneur's environmental scanning activities will thus be studied in this research as there is no empirical evidence to support the contention that there is a positive relationship between the level of education an entrepreneur has and the environmental scanning activities adopted in growing the venture.

2.5 Conclusion

From the literature review, it is clear that education plays a vital role in the success of an organisation and provides a vital instrument to entrepreneurs in the challenge of growing their organisations. Highly educated entrepreneurs are thus more adept at identifying opportunities and threats in their business environment. This proposition will be tested through a quantitative research methodology, which if proven correct, will prove useful for governments seeking to ensure long term economic growth.

3. RESEARCH HYPOTHESES

The aim of this research is to prove that there is a positive relationship between the level and the type of education an entrepreneur has, and the ability the entrepreneur has to scan the business environment in order to make informed decisions, which will result in the positive growth of their venture.

The dependent variables in this study are:

- the ability to scan the environment to identify threats and opportunities in order to protect and grow the entrepreneur's business; and
- The growth of the business.

Environmental scanning has been measured in terms of environmental scanning activities and environmental scanning modes. The growth of the business has been measured in terms of revenue growth rate.

The independent variables are: the level of education and the type of education. The control variables at the organisational level are the age of the firm, the size of the firm; the industry the organisation is in; the resources available to the organisation at inception. The control variables at the individual level are: the age of the entrepreneur and the gender of the entrepreneur.

In order to explore if education has a positive impact on an entrepreneur's environmental scanning activities, the research objectives have been combined with the literature review, resulting in the formulation of the following hypotheses:

Objective 1: Restatement: To determine if environment scanning activities are positively related to level of education.

Hypothesis 1:

The null hypothesis under Objective 1 states that highly educated entrepreneurs do not have higher environmental scanning activities. The alternative hypothesis states that highly educated entrepreneurs have higher environmental scanning activities.

The formulation of this hypothesis is derived from previous research where the following was diagnosed (Beal, 2000): Environmental scanning activities will be positively related to competitive strategy alignment. Where that is achieved, the results are growth in the venture.

Objective 2: Restatement: To determine if environment scanning activities are positively related to type of education.

Hypothesis 2:

The null hypothesis under Objective 2 states that type of education does not lead to higher environmental scanning activities. The alternative hypothesis states that type of education leads to higher environmental scanning activities

Objective 3: Restatement: To explore whether the environmental scanning mode is positively related to level of education.

Hypothesis 3:

The null hypothesis under Objective 3 states that higher levels of education do not lead to a higher mode of scanning. The alternative hypothesis states that higher levels of education lead to a higher mode of scanning.

Daft et al (1988) have found that both informal and formal sources are valuable for organisational growth with respect to chief executive scanning. Formal sources are important for the economic sector, whilst personal sources provide intangible aspects of the environment that may be filtered out by written media (Weick, 1985; Daft & Huber, 1987) cited in Daft et al (1988).

Objective 4: Restatement: To explore whether the environmental scanning mode is positively related to type of education.

Hypothesis 4:

The null hypothesis under Objective 4 states that the type of education does not lead to higher modes of scanning. The alternative hypothesis states that the type of education leads to a higher mode of scanning.

Objective 5: Restatement: In organisations where entrepreneurs have a high level of education, higher growth will be achieved.

Hypothesis 5:

The null hypothesis under Objective 5 states that higher levels of education do not lead to higher revenue growth. The alternative hypothesis states that higher levels of education lead to higher revenue growth.

Objective 6: Restatement: In organisations where entrepreneurs have a certain type of education, higher growth will be achieved.

Hypothesis 6:

The null hypothesis under Objective 6 states that certain types of education do not lead to higher revenue growth. The alternative hypothesis states that certain types of education lead to higher revenue growth.

Objective 7: Restatement: In organisations where entrepreneurs engage in higher environment scanning activities, higher growth will be achieved.

Hypothesis 7:

The null hypothesis under Objective 7 states that higher environmental scanning activities do not lead to higher revenue growth. The alternative hypothesis states that higher environmental scanning activities do lead to higher revenue growth.

Objective 8: Restatement: In organisations where entrepreneurs use all the modes (formal and informal) of scanning, higher growth will be achieved.

Hypothesis 8:

The null hypothesis under Objective 8 states that a higher environmental scanning mode does not lead to higher revenue growth. The alternative hypothesis states that a higher environmental scanning mode leads to higher revenue growth.

4. RESEARCH METHODOLOGY AND DESIGN

4.1 Research Design

The research design was quantitative and descriptive in nature. Quantitative data is used as a synonym for data collection and analysis techniques that generate and use numerical data (Saunders, Lewis & Thornhill, 2009). Zikmund (2003) describes descriptive research as that which is designed to describe characteristics of a population phenomenon, in this case education in relation to the environmental scanning activities adopted by an entrepreneur in managing their business. Zikmund (2003) goes on to explain how descriptive research is conducted when there is some previous understanding of the nature of the research problem. Descriptive research seeks to determine the answers to whom, what, where and how questions, in this case: (Saunders et al. 2009)

- What is the impact of the level and type of education on the environmental scanning activities?
- What is the impact of the level and type of education on the environmental scanning mode of an entrepreneur?
- What is the impact of the level and type of education on the success of an organisation?
- What is the impact of environmental scanning activities on the growth of the business
- What is the impact of environmental scanning mode on the growth of the business

4.2 POPULATION AND UNIT OF ANALYSIS

The population consisted of all entrepreneurial ventures which were between two and ten years old and that were not franchisees. The minimum requirement of entrepreneurial ventures older than two years, is due to the fact that newer firms lack information as they have not amassed a significant amount of historical or internal data from which to draw (McGee & Sawyerr, 2003).

An entrepreneur was defined as a person who started a venture themselves and assumes responsibility and accountability of the business. Three industries were targeted in the research, and these were the Information Technology industry, the Advertising industry and the Construction industry. These were selected on the basis of their level of dynamism, with Information Technology being the most dynamic, the Advertising industry being moderately dynamic and the Construction industry being the least dynamic. The more dynamic the environment, the more time and effort is required to scan the environment (Jogaratham, 2005).

The unit of analysis for Hypotheses one – six was the individual entrepreneur; and for Hypothesis seven and eight, the organisation.

4.3 Sampling Method and Size

Non-probability sampling was used, and is described by Saunders et al (2009), as being a technique in which the probability of each case being selected from the total population is unknown. Snowball sampling was initially used to identify entrepreneurs for the desired population, and then convenience sampling was used to identify entrepreneurs most conveniently available. The key advantage of convenience sampling is that a large number of completed questionnaires can be obtained quickly and economically (Cooper & Schindler, 2006). The key disadvantage to this is that it is prone to bias and influences that are beyond one's control as the cases appear in the sample due to the ease of obtaining them (Saunders et al, 2009). It is therefore inappropriate to project data beyond the sample (Zikmund, 2003) but one may still be able to generalise about the population (Saunders et al, 2009).

The sample size was 121 entrepreneurs, with a fairly equal proportion for each of the three industries.

4.4 Data Gathering Process and Research Instrument

An interview administered questionnaire was deemed to be the most appropriate measurement instrument because it provided "an efficient way of collecting responses from a large sample prior to quantitative analysis" (Saunders et al, 2009, p.361). Dilman (2007) identified three types of data variables that could be collected through questionnaires. These are opinion, behaviour and attribute. In this study, the research questions and the questions designed for the questionnaire covered all three variable

types. Questions around environmental scanning fit into the 'behaviour' category as well as the opinion category, while questions about level and type of education fit into the 'attribute' category.

The questionnaire was comprised of four parts:

- The first part included a statement assuring the respondent that their answers were confidential, as their names were not captured on the research report.
- The second part included questions on the demographic profile of the respondent, such as age, educational qualifications and questions on the venture itself.
- The third part of the questionnaire was on current perceptions and practices. Each respondent had to respond to statements describing the different aspects of scanning the environment. They also had to indicate the extent to which they agreed or disagreed with each statement on a five-point Likert scale. The Likert scale was used to obtain sufficient discrimination. The statements covered the six environmental sectors of customer, competition, technology, regulatory, economic, social and political. Each scale point was labelled, as follows:

1 = "Strongly disagree"; **2** = "Disagree"; **3** = "Neither agree nor disagree"; **4** = "Agree"; and **5** = "Strongly agree".

Structured interviews were conducted which enabled the interviewer to explain the study to the respondent, answer questions posed by the respondent and to ensure that the respondent understood the questions. Questions were tested and revised through a

series of pilot interviews with executives not included in the final sample. Through conveying that the interview was confidential and that the respondent could discuss the topics with freedom from censure, coercion or pressure, the participants were comfortable in opening up without pressure being exerted (Cooper & Schindler, 2006). The greatest value in structured interviews lies in the “depth of information and detail that can be secured” (Cooper & Schindler, 2006:325). The key disadvantages to structured interviews is that they are time consuming and if the questions are not read out exactly as written and in the same tone of voice, the responses will be prone to bias (Saunders et al. 2009).

The design of the questionnaire that was used in this study is provided in **Appendix 1**. To increase the response rate, reliability and validity of the data collected:

- the individual questions were carefully designed;
- explanations of the purpose of the research were given to respondents;
- the questionnaire was clearly laid out; and
- the questionnaire was pilot tested before being rolled out (Saunders et al, 2009).

4.5 Data Analysis

4.5.1 Preparation of Data for Analysis

The first step in the data analysis process was to enter the data into an excel spread sheet. The data was then coded for analysis taking into account the different types of

data (categorical and ratio). This was required to get the data ready for statistical analysis by the analysis software which was used in the study. The data was checked for missing data; errors and any inconsistencies that may have occurred in the data collection. The statistical analysis was performed by SPSS and NCSS and attempts to provide insight into the data set. Further, the respondents were disguised by allocating numbers to each respondent to ensure anonymity.

The data analysis conducted was deductive and confirmatory. It is important to understand the different types of measurement scales that were used in the questionnaire, as they will determine the type of test used:

- **Non-parametric Analysis**

Non-parametric analysis is used for nominal and ordinal (ranking but no interval) data. In this study, nominal data included the type of education, the gender of the respondent and the type of industry the business is in. The ordinal data included the level of education; revenue growth rate; range of net profit margins; years taken to break-even and revenue generated in the most recent year.

- **Parametric Analysis**

Parametric analysis is used for interval and ratio data. The interval data includes the Likert scale scoring of environmental scanning activities and environmental scanning modes. The ratio data includes the age of the founder and the year the business was founded.

4.5.2 Exploring and Presenting Data

The data collected was explored using frequency distributions, trend analysis and ranges of values, to gain an understanding of the data collected and provide a context for further data analysis. The exploratory data analysis was illustrated with graphical representation and tabulations of the data, to identify relationships.

4.5.3 Examining Data using Statistics

The analysis that was performed on the data can only supply information on the significance of the relationships or differences between the variables. Inferences cannot be made in all cases due to the fact that the measured relationships were between categorical and interval data.

Cross Tabulation

Cross tabulation was used to inspect differences among groups and to make comparisons. Cross tabulation was therefore used in measuring the existence or absence of a relationship between each of the variables and the significance thereof.

Correlation Analysis

Correlation analysis was used to indicate the relationship of one variable to another. The correlation coefficient, which ranges from +1.0 to -1.0 indicates the magnitude of the linear relationship and the direction of the relationship (Zikmund, 2003). A positive value shows that the relationship is positive, meaning that an increase in one variable means an increase in the other variable. The following associations were conducted using the

Pearson correlation:

- Environmental Scanning Activities and Environmental Scanning Mode
- Revenue Growth and Environmental Scanning Activities
- Revenue Growth and Environmental Scanning Activities

Analysis of Variance (ANOVA)

The Analysis of Variance (ANOVA) was used in comparing the means of groups of observations. The ANOVA test was used to compare the independent variables, education level and education type against the dependent variables, environmental scanning activity, environmental scanning mode and revenue growth rate. In this study an F-test was used to test the null hypothesis for the difference in means between the various groups. The test did not provide information about the magnitude of the difference.

Independent Samples t-Test

The independent samples t-test was used to compare the means of two samples. A low significance value for the t-test (less than 0.05) indicates that there is a significant difference between the two group means. The result is a rejection of the null hypothesis and acceptance of the alternative hypothesis.

Mann-Whitney U Test

The Mann-Whitney U test which is the non-parametric equivalent of an independent samples t-test was used to test that two sampled populations were equivalent in location. The Mann-Whitney U test was used to test the relationship between ordinal and ratio data and between nominal and ratio data.

4.6 Research Limitations

The research had the following limitations:

- The sample of respondents was limited to three industries; therefore the results might not be relevant to other companies or industries
- The usual limitations of structured interviews apply, namely response bias, longer period needed in the field collecting data
- Non-probability sampling method was used, limiting the ability to infer from the findings across the population
- This research was limited by the cross sectional nature of the research design. Longitudinal research on education and environmental scanning could enhance our understanding of the impact that education has on environmental scanning. Adams &Schvaneveldt (1991) in Saunders et al (2009, p.155) point out that in observing events over time the “researcher is able to exercise a measure of control over variables being studied, provided that they are not affected by the research process itself”.
- Small businesses tend to understate their revenue streams, in the aim of understating their tax liability.

- Entrepreneurs with no college education may be sensitive to disclose that to the interviewee.
- Since all of the respondents' entities do not hold public information, they may not be comfortable about disclosing their revenues, thus the missing data.

5. RESULTS

5.1. Introduction

This chapter describes and analyses the survey data obtained for this research process. It includes preliminary data analysis for completeness; data analysis to determine the reliability of the survey instrument; exploratory data analysis to provide a profile of the data for this research; and findings of the research hypothesis as set out in Chapter 3. The chapter concludes with a summary of the results and leads into the next chapter which discusses the results obtained.

5.2. Preliminary Data Analysis

Response Rate

A total of 121 respondents were contacted and surveyed using the snowball and convenience sampling techniques. It is irrelevant to report on response rate because of the sampling technique used.

Response Bias

Interviewer bias is defined by Saunders et al. (2009, p.593) as an “Attempt by an interviewer to introduce bias during the conduct of an interview, or where the appearance or behaviour of the interviewer has the effect of introducing bias in the interviewee’s responses.” The interviewer bias was therefore not applicable to this research due to the research methodology adopted and the design of the research instrument.

Missing Data

Since the interviewer-administered questionnaire was used, it ensured that non-response items were avoided by the interviewer. Due to the sensitivity of some of the data collected, there were 12 missing items in a sample size of 121 respondents. Subsequently, there was no need to consider missing data substitution due to the sample size.

5.3. Analysis of Reliability

The Internal consistency was measured to assess the reliability of the scales used in the study. The consistency of responses was therefore tested using Chronbach alpha as the measure. Chronbach alpha is used to test the reliability of ratio and interval data

According to Saunders et al. (2009, p.374), internal consistency involves “correlating the responses to each question in the questionnaire with those to other questions in the questionnaires.” The Cronbach alpha calculated for this research was 0.863 for Environmental scanning activities and 0.732 for Environmental scanning mode. There is no item that was found, if removed will improve the Chronbach alpha, as indicated in **Appendices 2 and 3**. All items were less than 0.863 and 0.732, respectively. It can be concluded that the measurement scales used to measure environmental scanning activity and environmental scanning mode were reliable.

5.4. Exploratory Data Analysis

Exploratory data analysis was performed to understand the data collected and the characteristics of the sample. The total sample consisted of entrepreneurs in equal proportions from the Information Technology, Construction and Advertising industries.

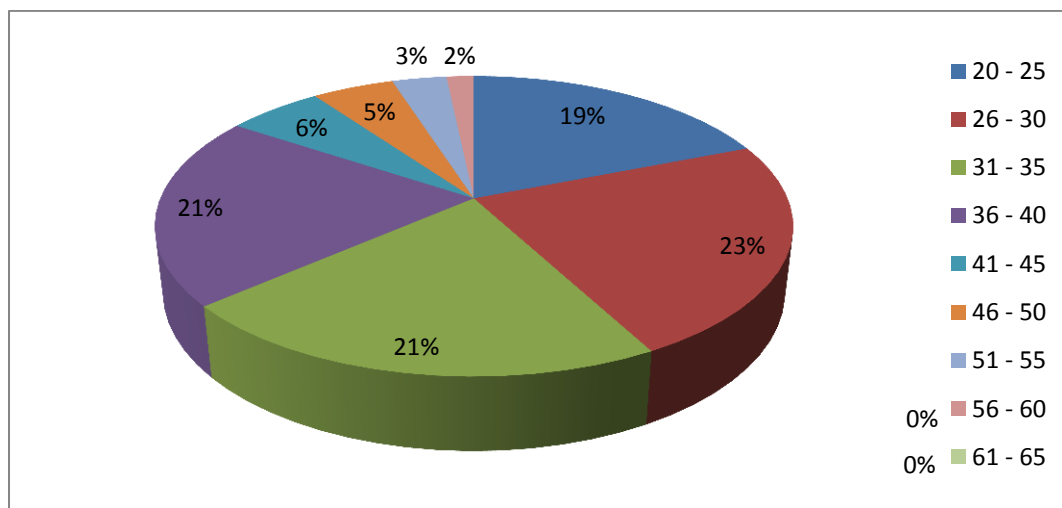
Gender of Founder

Question 1 collected categorical data on the gender of the founder of the business. From the sample, 16% of the interviewees were female and 84% were male.

Age of Founder

Question 2 collected categorical data on the age of the founder at the inception of the venture. A pie chart was drawn to represent this information in Figure 5.3. The pie chart indicates that 23% of the entrepreneurs started their businesses between 26 and 30 years of age; 21% between 31 and 35 years of age and 21% between 36 and 40 years of age.

Figure 5.1: Age of Founder at Inception of Business



Level and Type of Education

Question 3 and 4 collected categorical data on the level and type of education that the entrepreneurs had. Pie charts were therefore drawn to describe the proportion of educational levels and the proportion of types of education in the sample. Figure 5.2 indicates that most of the respondents had a Bachelor’s Degree, whilst the least number had a Doctorate. Figure 5.3 indicates that, of the defined education types, Business qualifications and Engineering were the most common types of education in the sample.

Figure 5.2: Proportion of Education Levels

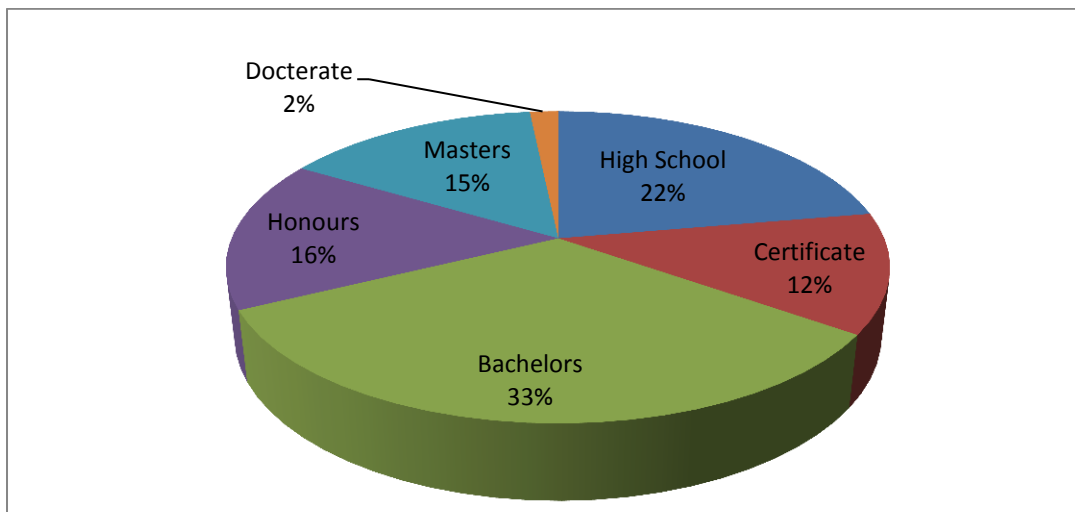
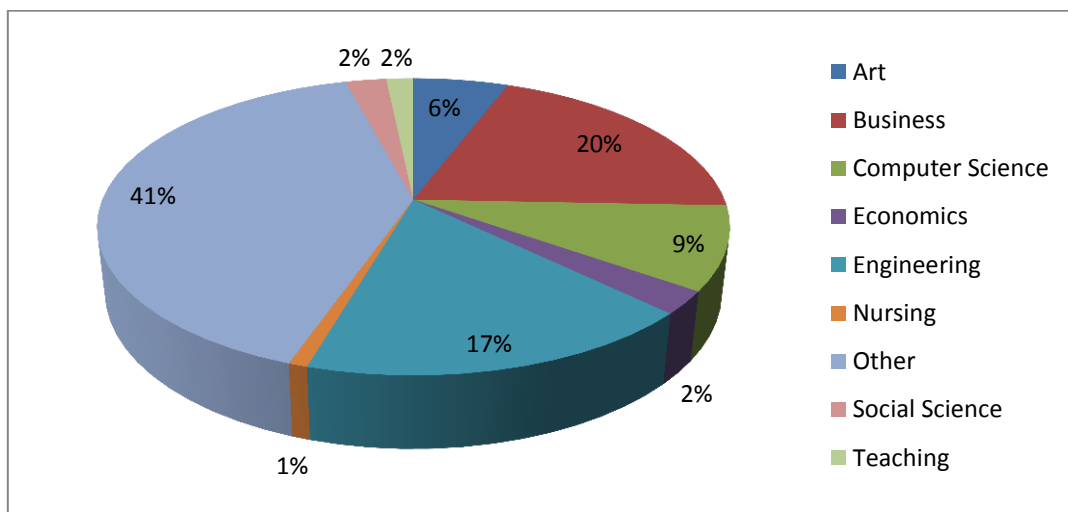


Figure 5.3: Proportion of Types of Education



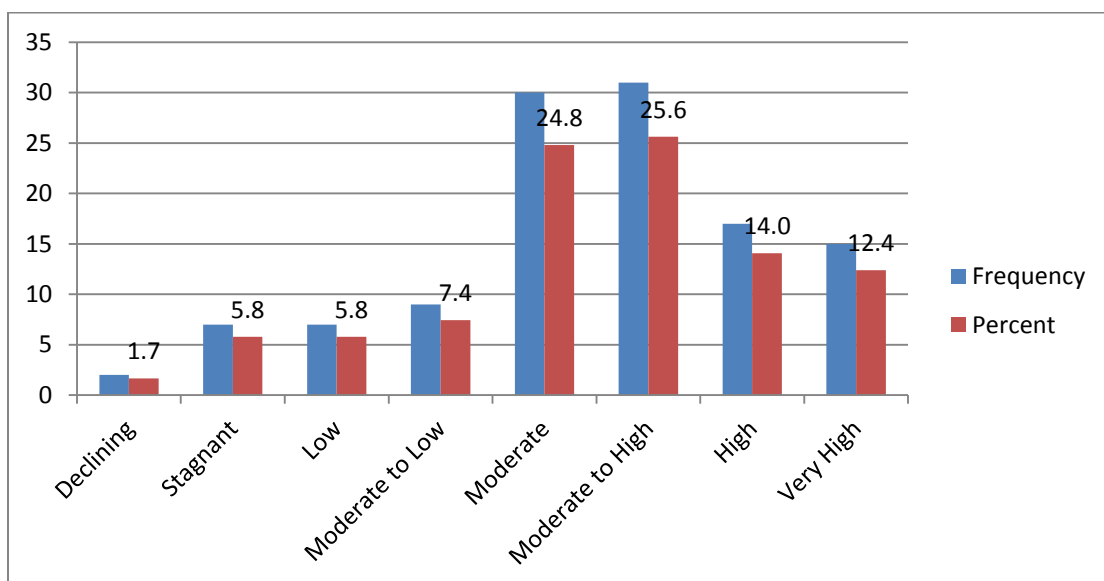
Revenue Growth Rate

Question 8 collected data on the latest revenue growth rate. The relevant aspect concerned the frequency of occurrence of responses in specific categories and a bar chart was therefore drawn (Figure 5.4). The results of the frequency table indicate that the data values were positively skewed with the majority of respondents showing moderate to high levels of revenue growth. The graph further indicates that 25.6% of the respondents had moderate to high revenue growth rates and a meagre 1.7% had declining revenue growth rates.

Table 1: Frequency Table on Revenue Growth Rate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Declining	2	1.7	1.7	1.7
	Stagnant	7	5.8	5.9	7.6
	Low	7	5.8	5.9	13.6
	Moderate to Low	9	7.4	7.6	21.2
	Moderate	30	24.8	25.4	46.6
	Moderate to High	31	25.6	26.3	72.9
	High	17	14.0	14.4	87.3
	Very High	15	12.4	12.7	100.0
	Total	118	97.5	100.0	
Missing	999	3	2.5		
Total		121	100.0		

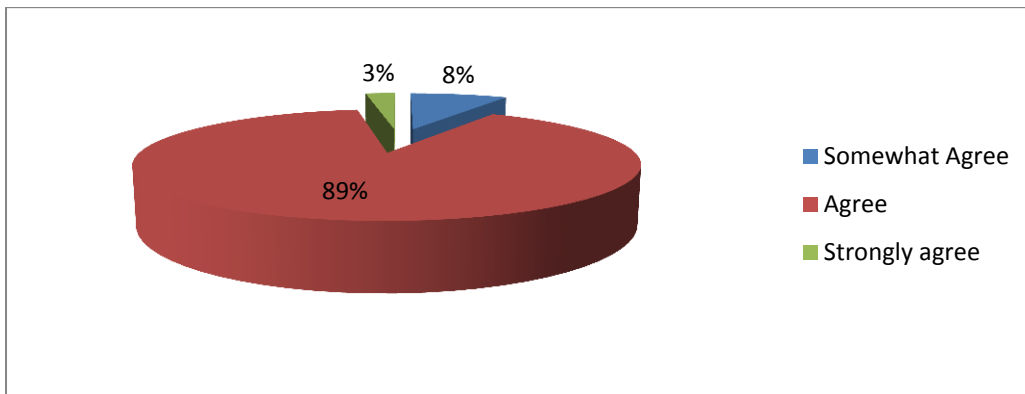
Figure 5.4: Revenue Growth Rate



Environmental Scanning Activity

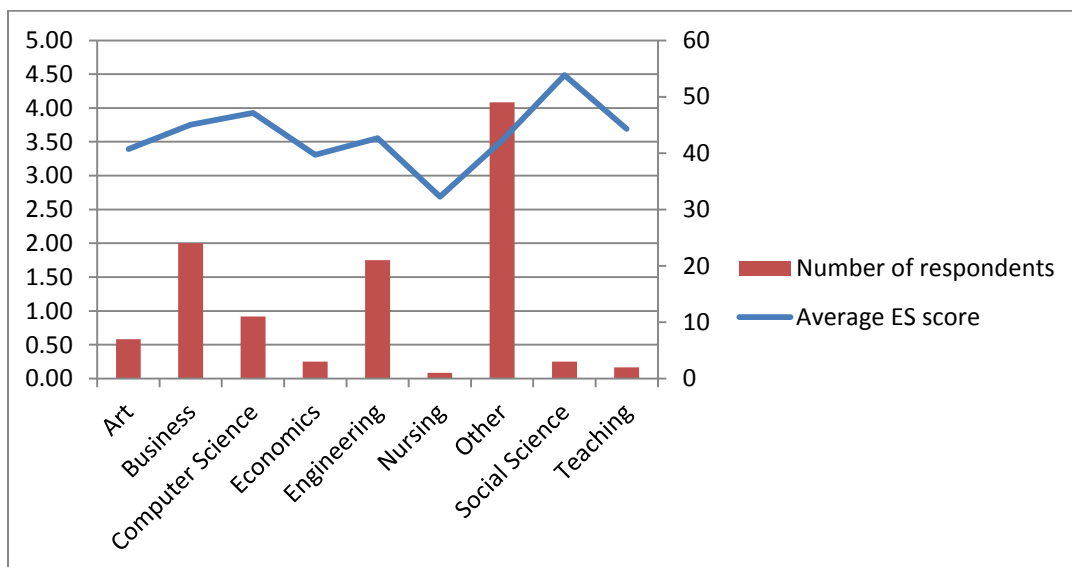
Question 11 collected data on the proportion of respondents agreeing or disagreeing with the statements describing different aspects of scanning the environment. A pie chart was drawn to illustrate the proportion of responses received (Figure 5.5). None of the respondents disagreed or were neutral about the questions posed to them on their current perceptions and practices with respect to environmental scanning activity.

Figure 5.5: Proportion of Entrepreneurs who agree with Environmental Scanning Activity



Question 11 rated an entrepreneur's environmental scanning activity on a Likert scale. The data analysis involved the averaging of the environmental scanning activity score that a respondent got, and comparing that to the type of education. From the graphical presentation in Figure 5.6 there is indication that entrepreneurs with Social Science and Computer Science qualifications scan the environment more than other types of education.

Figure 5.6: Average Environmental Scanning Score Attained by the Different Types of Education



5.5. Correlation Analysis

“The most popular technique that indicates the relationship of one variable to another is simple correlation analysis” (Zikmund, 2003:551). The correlation coefficient indicates the magnitude of the linear relationship and the direction of the relationship. The correlation matrix shows the relationship between the various variables. The correlation coefficient, ranges from +1.0 to -1.0. A positive value shows that the relationship is positive i.e. an increase in one will result in an increase in the other. A value above 0.7 indicates a very strong relationship, a value of above 0.5 indicates a moderately strong relation, and below 0.5 indicates a weak relationship.

The following associations were explored using the Pearson correlation:

- Environmental Scanning Activities and Environmental Scanning Mode
- Revenue Growth and Environmental Scanning Activities
- Revenue Growth and Environmental Scanning Activities

The results in Table 2 below indicate that there are no very strong relationships. The Relationship between environmental scanning activity and environmental scanning mode was found to be moderately strong (0.5759). This means that an increase in environmental scanning activities will result in an increase in environmental scanning modes.

The tests were done at a 5% significance level, and at this level the relationship between revenue growth and environmental scanning activity was found to be weak (0.164920); as well as the relationship between revenue growth and environmental

scanning mode (0.242856). However, environmental scanning mode has a stronger correlation with revenue growth when compared to environmental scanning activity. This means that an increase in environmental scanning mode will result in an increase in revenue.

Table 2: Pearson Correlation Analysis

	Revenue Growth	Environmental scanning activity	Environmental scanning mode
Revenue Growth	1.000000	0.164920	0.242856
Environmental scanning activities	0.164920	1.000000	0.575969
Environmental scanning mode	0.242856	0.575969	1.000000

5.6. Descriptive Data Analysis

Descriptive statistics was used to examine the relationships between the variables. The statistical data analysis packages, SPSS and NCSS 2007[®] were used in conjunction with excel used to analyse the data, where appropriate.

Testing of Hypotheses

The Analysis of Variance (ANOVA) and the two sample t-tests were the two procedures that were used to test the overall strength of the relationship between the dependent variables and the independent variables. Since the data was parametric, the parametric ANOVA test result was used to make the inference.

The ANOVA compares the means of two or more independent samples at the same time irrespective of the data type. The regression analysis was not used as a statistical test as it is only applicable to ratio data. The data types used in this study were nominal, ordinal, interval and ratio data. The independent variables were nominal (education

type) and ordinal (education level). The dependent variables were interval data (environmental scanning activity and environmental scanning mode). It was therefore possible to compare the relationships between the two independent variables and the two dependent variables using ANOVA and t-tests.

For two sample t-tests, NCSS 2007® reports the results of four different tests. Based on the characteristics of the data, the results of the appropriate test were utilised to make the statistical inference. The different combinations of data and the statistical tests that were used to make the statistical inferences are reported in the table below. The table also reports the relevant test statistic.

Table 3: Selection of the appropriate difference test

Data Characteristics		Appropriate difference test reported by NCSS 2007®	Appropriate test statistic reported by NCSS 2007®
Normal	Equal Variance		
Yes	Yes	Equal-Variance T-Test	T-value
Yes	No	Aspin-Welch Unequal-Variance Test	T-value
No	Yes	Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians	Z-value
No	No	Kolmogorov-Smirnov Test For Different Distributions	Dmn criterion value*

* Maximum difference between the two empirical distribution functions

The different levels of education have been classified into the following levels:

Level 1 = High School, Level 2 = Certificate, Level 3 = Bachelor, Level 4 = Honours, Level 5 = Masters and Level 6 = Doctorate

With respect to education type, the data has been grouped into Groups of Disciplines in order to run the ANOVA tests effectively. The groupings are detailed in Table 4 and 5.

Table 4: Education Type Groups for the ANOVA tests

	Commerce	Science	Humanities	Other
	Economics (3)	Computer Science (11)	Art (7)	Nursing (1)
	Business (24)	Engineering (21)	Social Science (3)	Other (49)
			Teaching (2)	
TOTAL	27	33	12	50
% of Sample	22%	27%	10%	41%

Table 5: Education Type Groups for the t-tests

	Commerce	Science	Humanities	Professions	Other
	Economics (3)	Computer Science (11)	Art (7)	Nursing (1)	Other (49)
	Business (24)		Social Science (3)	Engineering(21)	
			Teaching (2)		
TOTAL	27	11	12	22	49
% of Sample	22%	9%	10%	18%	40%

Please note that the different groups were used for the different tests (Table 4 and 5) to find if there were any statistical differences if Engineering was categorised as a Science qualification.

The Impact of the Level of Education on Environmental Scanning Activity

- **Hypothesis 1:**

H0: Highly educated entrepreneurs do not have higher environmental scanning activities

H1: highly educated entrepreneurs have higher environmental scanning activities

Using Analysis of Variance

Hypotheses

H0: All means are equal.

Ha: At least two means are different.

Table 6: Test Results: ANOVA for Hypothesis 1

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Environmental Scanning Activities	4	1.51000	0.204876	Accept H0

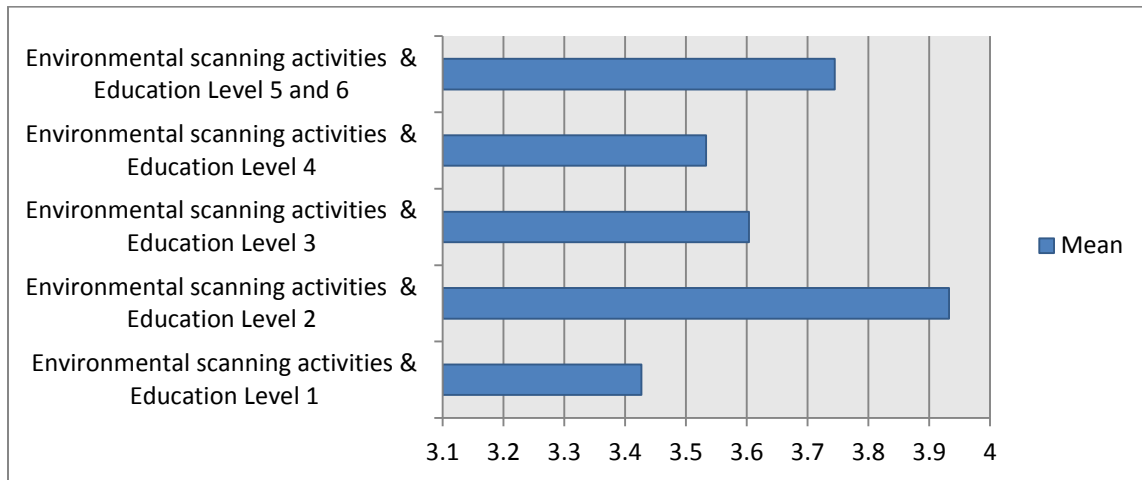
The ANOVA test indicates that there is no significant relationship between an entrepreneur's level of education and his / her environmental scanning activities.

Table 7: Descriptive Statistics: Hypothesis 1

Relationships	Count	Mean
Environmental scanning activities & Education Level 1	27	3.427037
Environmental scanning activities & Education Level 2	19	3.932667
Environmental scanning activities & Education Level 3	40	3.60375
Environmental scanning activities & Education Level 4	20	3.533158
Environmental scanning activities & Education Level 5 and 6	15	3.745

Table 7 indicates that entrepreneurs with educational level 2 (certificate) scan the environment more than all the other levels; followed by entrepreneurs with education level 5 (Masters) and 6 (Doctorate) who had the second highest average of 3.745.

Figure 5.7: Bar Graph of the Means of the Environmental Scanning Activities and Level of Education



Using t-tests

Since no relationship could be found between the level of education an entrepreneur has and his / her environmental scanning activities, the t-test was used. The t-test is used to ascertain whether there are any differences between the means of individual education levels. Eighty t-tests were performed, and due to the volume of the results, the results that were reported on were results that “rejected the null hypothesis”. The rest of the data is available electronically in the submitted CD. A summary of the results is available in the summary section.

Table 8: t-test Results for Hypothesis 1

Variables	Environmental scanning activities for education level 1	Environmental scanning activities for education level 2
Sample Size	27	15
Mean	3.427037	3.932667
Std.Dev.	0.6831309	0.6448418
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-2.3436 (T-value)	
p-value	0.012079	
Power	0.744975	
Decision	Reject H₀	

Table 9: t- Test Results for Hypothesis 1

Variables	Environmental scanning activities for education level 1	Environmental scanning activities for education level 5 and 6
Sample Size	27	20
Mean	3.427037	3.745
Std.Dev.	0.6831309	0.4846323
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Mann-WhitneyU or Wilcoxon Rank-Sum Test for Difference in Medians	
Test Statistic	2.0497(Z-value)	
p-value	0.020199	
Decision	Reject H₀	

The results from Table 8 and 9 indicate that entrepreneurs with level 1 education (high school) scan less frequently than entrepreneurs with education levels 2 (Certificate), 5 (Masters) and 6 (Doctorate).

The Impact of Type of Education on Environmental Scanning Activity

- **Hypothesis 2:**

H0: The type of education does not lead to higher environmental scanning activities

H1: The type of education leads to higher environmental scanning activities

Using Analysis of Variance

Hypotheses

H0: All means are equal.

Ha: At least two means are different.

Table 10: Test Results: ANOVA for Hypothesis 2

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Environmental Scanning Activities	3	0.72	0.544057	Accept H0

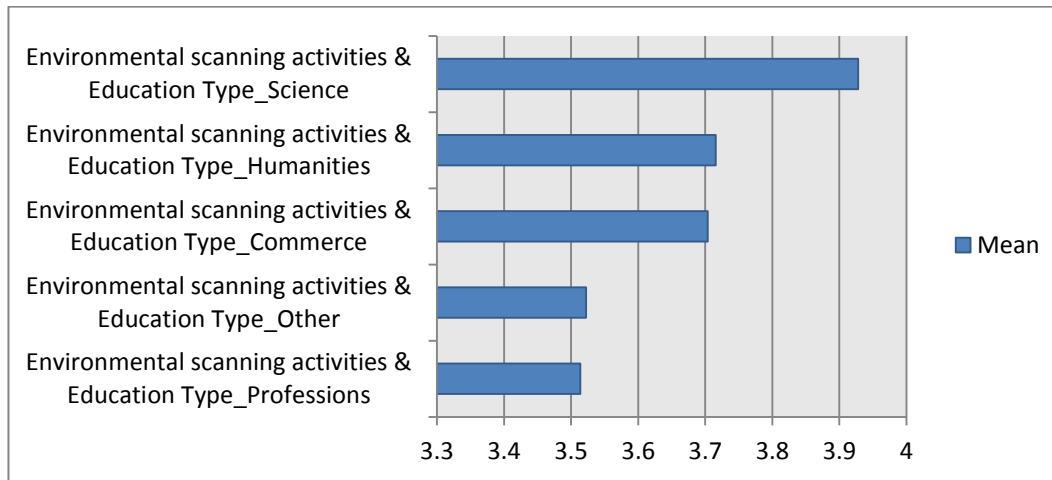
The ANOVA test indicates that there is no significant relationship between an entrepreneur's type of education and his / her environmental scanning activities.

Table 11: Descriptive Statistics: Hypothesis 2

Relationships	Count	Mean
Environmental scanning activities & Education Type - Professions	27	3.513636
Environmental scanning activities & Education Type - Other	19	3.522449
Environmental scanning activities & Education Type - Commerce	40	3.703704
Environmental scanning activities & Education Type - Humanities	20	3.715833
Environmental scanning activities & Education Type - Science	15	3.928182

Table 11 indicates that entrepreneurs with a Science qualification (Computer Science and Engineering) scan the environment more than other types of qualifications; followed by entrepreneurs with Humanities qualification who had the second highest average of 3.716. Professions scan the least.

Figure 5.8: Bar Graph of the Means of the Environmental Scanning Activities and Type of Education



Using t-tests

Since we could not find a relationship between the type of education an entrepreneur has and his or her environmental scanning activities, we have used the t-tests. The t-test has been used to ascertain whether there are any differences between the means of individual education types by comparing them to each other.

Table 12: t-test Results for Hypothesis 2

Variables	Environmental scanning activities for education type - Profession	Environmental scanning activities for education type - Science
Sample Size	22	11
Mean	3.513636	3.928182
Std.Dev.	0.7863511	0.4957382
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-2.0417 (T-value)	
p-value	0.022868	
Power	0.645414	
Decision	Reject H₀	

The results from Table 12 indicate that entrepreneurs with a professional qualification scan less than entrepreneurs with a science qualification.

Table 13: t- test Results for Hypothesis 2

Variables	Environmental scanning activities for education type - Other	Environmental scanning activities for education type - Science
Sample Size	49	11
Mean	3.522449	3.928182
Std.Dev.	0.6143748	0.4957382
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Aspin-Welch Unequal Variance Test	
Test Statistic	1.8456 (T-value)	
p-value	0.037575	
Power	0.562616	
Decision	Reject H₀	

The results from Table 13 indicate that entrepreneurs with other qualifications scan less than entrepreneurs with a science qualification.

The Impact of Level of Education on Environmental Scanning Mode

- **Hypothesis 3:**

H0: Higher levels of education do not lead to a higher mode of scanning

H1: Higher levels of education do not lead to a higher mode of scanning

Using Analysis of Variance

Hypotheses

H0: All means are equal.

Ha: At least two means are different.

Table 14: Test Results: ANOVA for Hypothesis 3

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Environmental Scanning Mode	4	2.70000	0.034250*	Reject H0

* Term significant at alpha = 0.05

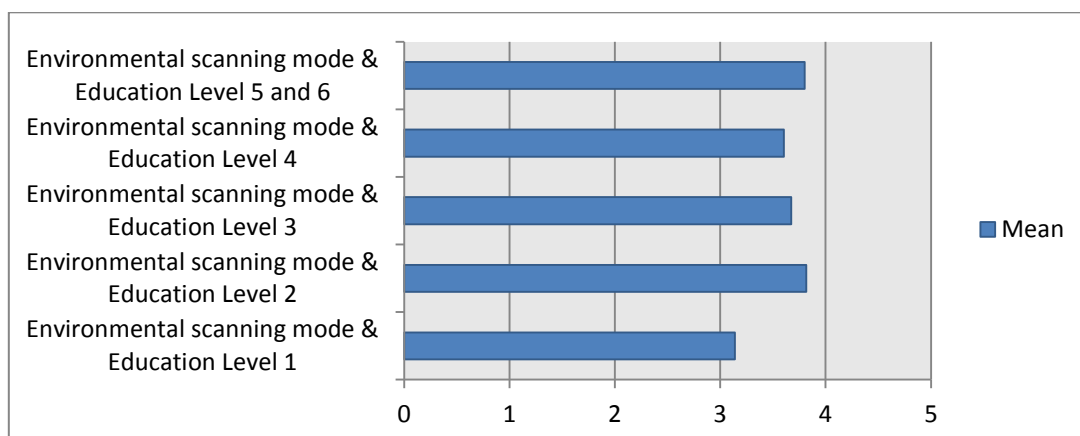
The ANOVA test indicates that there is a significant relationship between an entrepreneur's level of education and his / her environmental scanning modes.

Table 15: Descriptive Statistics: Hypothesis 3

Relationships	Count	Mean
Environmental scanning mode & Education Level 1	27	3.138889
Environmental scanning & Education Level 2	19	3.81667
Environmental scanning & Education Level 3	40	3.675
Environmental scanning & Education Level 4	20	3.605263
Environmental scanning & Education Level 5 and 6	15	3.8

Table 15 shows that respondents with education level 5 (Masters),6 (Doctorate) and 2 (Certificate) had the highest average environmental scanning mode rates. The lowest rate was scored by education level 1 (High school).

Figure 5.9: Bar Graph of the Means of the Environmental Scanning Mode and the Level of Education



Using t-tests

As a relationship was found between the level of education an entrepreneur has and his or her environmental scanning modes, we have used the t-tests to investigate further. The t-test has been used to ascertain whether there are any differences between the means of environmental scanning modes for individual education levels by comparing them to each other.

Table 16: t-test Results for Hypothesis 3

Variables	Environmental scanning modes for education level 1	Environmental scanning modes for education level 2
Sample Size	27	15
Mean	3.138889	3.816667
Std.Dev.	0.9640992	0.8043779
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-2.3093 (T-value)	
p-value	0.013085	
Power	0.734060	
Decision	Reject H₀	

The results from Table 16 indicate that entrepreneurs with education level 1 (high school) have a lower mode of scanning as compared to entrepreneurs with level 2 (certificate).

Table 17: t-test Results for Hypothesis 3

Variables	Environmental scanning modes for education level 1	Environmental scanning modes for education level 3
Sample Size	27	40
Mean	3.138889	3.675
Std.Dev.	0.9640992	0.7683649
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-2.5261 (T-value)	
p-value	0.006989	
Power	0.803676	
Decision	Reject H₀	

The results from Table 17 indicate that entrepreneurs with education level 1 (high school) have a lower mode of scanning as compared to entrepreneurs with level 3 (bachelor).

Table 18: t-test Results for Hypothesis 3

Variables	Environmental scanning modes for education level 1	Environmental scanning modes for education level 4
Sample Size	27	19
Mean	3.138889	3.605263
Std.Dev.	0.9640992	0.8006759
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-1.7289 (T-value)	
p-value	0.045420	
Power	0.522878	
Decision	Reject H₀	

The results from Table 18 indicate that entrepreneurs with education level 1 (high school) have a low mode of scanning as compared to entrepreneurs with level 4 (honours).

Table 19: t-test Results for Hypothesis 3

Variables	Environmental scanning modes for education level 1	Environmental scanning modes for education level 5 and 6
Sample Size	27	20
Mean	3.138889	3.138889
Std.Dev.	0.9640992	0.8013147
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Mann-WhitneyU or Wilcoxon Rank-Sum Test for Difference in Medians	
Test Statistic	2.4664 (Z-value)	
p-value	0.006824	
Decision	Reject H₀	

The results from Table 19 indicate that entrepreneurs with education level 1 (high school) have a low mode of scanning as compared to entrepreneurs with level 5 (masters) and level 6 (doctorate).

Tables 16 – 19 indicate that entrepreneurs with education level 1 (high school) have a lower mode of scanning as compared to entrepreneurs who have studied further. There is however no difference between the modes of scanning of entrepreneurs with a Certificate qualification and above.

The Impact of Type of Education on Environmental Scanning Mode

- **Hypothesis 4:**

H₀: The type of education does not lead to higher modes of scanning

H₁: The type of education leads to a higher mode of scanning

Using Analysis of Variance

Hypotheses

H₀: All means are equal.

H_a: At least two means are different.

Table 20: Test Results: ANOVA for Hypothesis 4

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Environmental Scanning Mode	3	2.07	0.108195	Accept H0

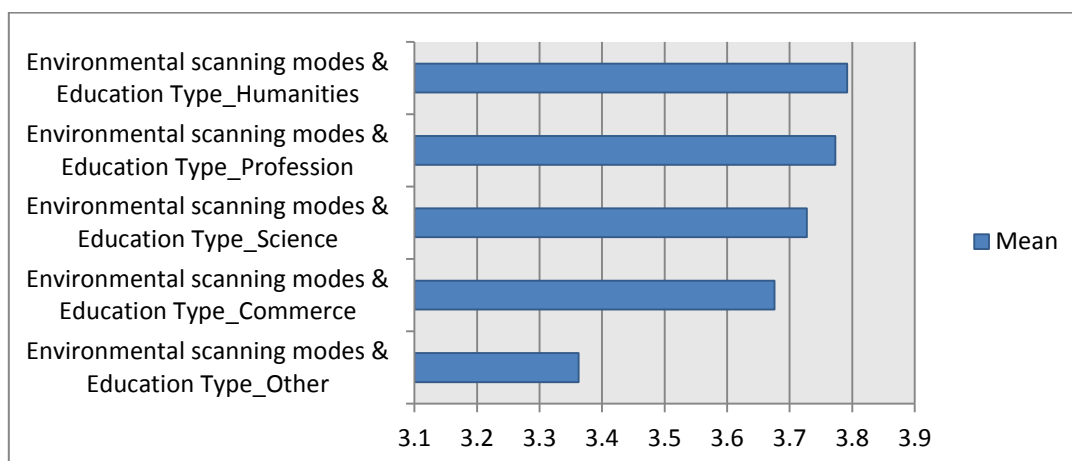
The ANOVA test indicates that there is no significant relationship between an entrepreneur’s type of education and his / her environmental scanning modes.

Table 21: Descriptive Statistics: Hypothesis 4

Relationships	Count	Mean
Environmental scanning modes & Education Type – Other	49	3.362245
Environmental scanning modes & Education Type - Commerce	27	3.675926
Environmental scanning modes & Education Type - Science	11	3.727273
Environmental scanning modes & Education Type - Profession	22	3.772727
Environmental scanning modes & Education Type - Humanities	12	3.791667

Table 21 shows that entrepreneurs with a Humanities qualification had the highest average environmental scanning mode, followed by entrepreneurs with a Professional and Science qualification respectively.

Figure 5.10: Bar Graph of the Means of the Environmental Scanning Modes and Type of Education



Using t-tests

Table 22: t-test Results for Hypothesis 4

Variables	Environmental scanning modes for education type - Profession	Environmental scanning modes for education type - Other
Sample Size	22	49
Mean	3.772727	3.362245
Std.Dev.	0.1652339	0.1334438
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-1.7998 (T-value)	
p-value	0.038135	
Power	.554574	
Decision	Reject H₀	

Table 23: t-test Results for Hypothesis 4

Variables	Environmental scanning modes for education type - Commerce	Environmental scanning modes for education type - Other
Sample Size	27	49
Mean	3.675926	3.362245
Std.Dev.	0.7808243	0.9341066
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Mann-WhitneyU or Wilcoxon Rank-Sum Test for Difference in Medians	
Test Statistic	1.6839 (Z-value)	
p-value	0.046101	
Decision	Reject H₀	

The results indicate that entrepreneurs with either a Commerce qualification or a Professional qualification use more environmental scanning modes to scan their environments for opportunity identification, more than other qualifications. This is not a strong result as “other” is not defined.

The Impact of Education Level on Revenue Growth

- **Hypothesis 5:**

H0: higher levels of education do not lead to higher revenue growth.

H1: higher levels of education lead to higher revenue growth.

Using Analysis of Variance

Hypotheses

H0: All means are equal.

Ha: At least two means are different.

Table 24: Test Results: ANOVA for Hypothesis 5

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Revenue Growth Rate	4	0.84000	0.505105	Accept H0

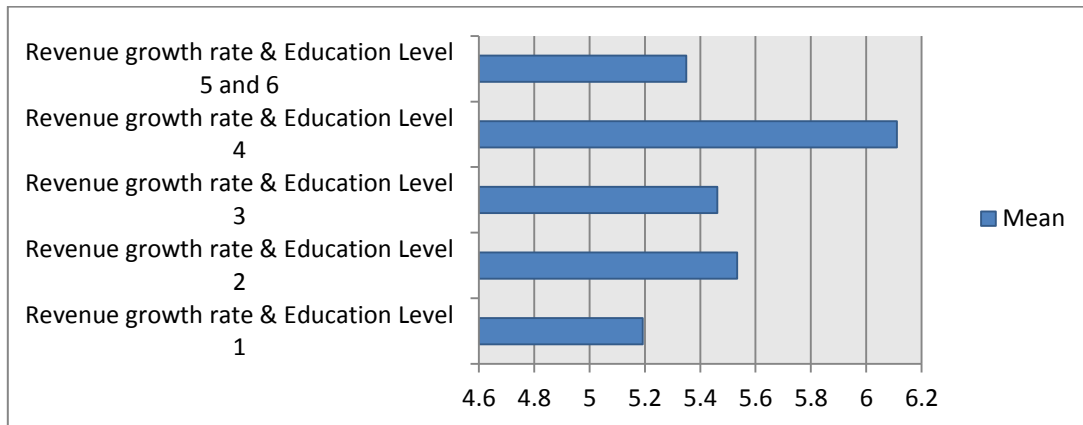
The ANOVA test indicates that there is no significant relationship between an entrepreneur's level of education and his / her revenue growth rate.

Table 25: Descriptive Statistics: Hypothesis 5

Relationships	Count	Mean
Revenue growth rate& Education Level 1	26	5.192307
Revenue growth rate & Education Level 2	15	5.533333
Revenue growth rate & Education Level 3	39	5.461538
Revenue growth rate & Education Level 4	18	6.11111
Revenue growth rate & Education Level 5 and 6	20	5.35

The mean is the sum of the different categories of revenue growth/no. of respondents. The revenue growth rate for an entrepreneur with an Honours degree is averaged at 6.111, which is the highest; with the lowest being for an entrepreneur with a high school qualification.

Figure 5.11: Bar Graph of the Means of the Environmental Scanning Modes and Type of Education



The Impact of Type of Education on Revenue Growth

- **Hypothesis 6:**

H0: The type of education does not lead to higher revenue growth.

H1: The type of education leads to higher revenue growth.

Using Analysis of Variance

Hypotheses

H0: All means are equal.

Ha: At least two means are different

Table 26: Test Results: ANOVA for Hypothesis 6

Sample	Degrees of Freedom	F-Ratio	P-Value	Decision (0.05)
Revenue Growth Rate	3	1.9	0.133338	Accept H0

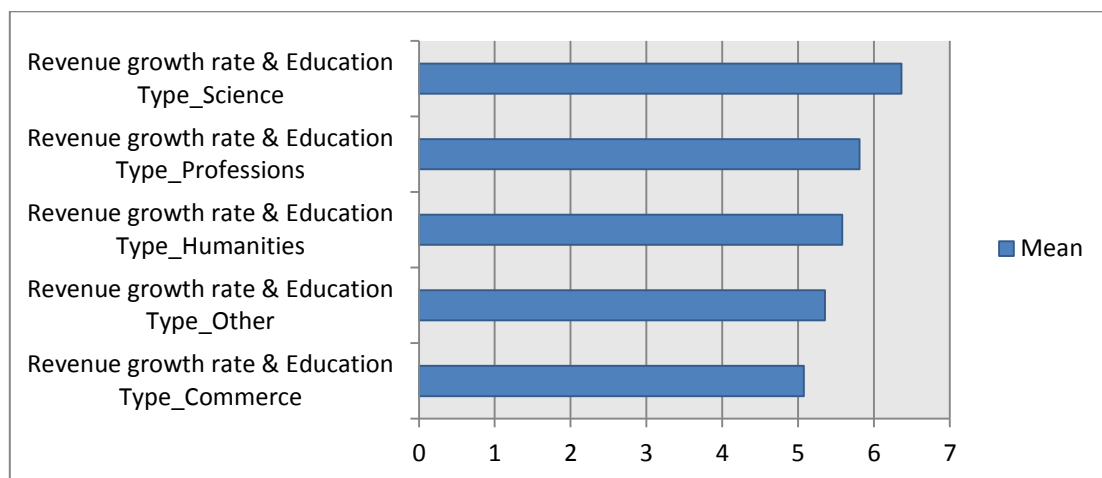
The ANOVA test indicates that there is no significant relationship between an entrepreneur's type of education and his / her revenue growth rate.

Table 27: Descriptive Statistics: Hypothesis 6

Relationships	Count	Mean
Revenue growth rate & Education Type - Commerce	26	5.076923
Revenue growth rate & Education Type - Other	48	5.354167
Revenue growth rate & Education Type - Humanities	12	5.583333
Revenue growth rate & Education Type - Professions	21	5.809524
Revenue growth rate & Education Type - Science	11	6.363636

Table 26 shows that entrepreneurs with a Science qualification had the highest average growth rate as compared to other types of education, with the lowest average being attained by entrepreneurs with a Commerce qualification.

Figure 5.12: Bar Graph of the Means of the Environmental Scanning Modes and Type of Education



Using t-tests

Table 28: t-test Results for Hypothesis 6

Variables	Environmental scanning modes for education type - Science	Environmental scanning modes for education type - Other
Sample Size	11	48
Mean	6.363636	5.354167
Std.Dev.	1.747726	1.768394
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Mann-WhitneyU or Wilcoxon Rank-Sum Test for Difference in Medians	
Test Statistic	1.7571 (Z-value)	
p-value	0.039450	
Decision	Reject H₀	

Table 29: t-test Results for Hypothesis 6

Variables	Environmental scanning modes for education type - Science	Environmental scanning modes for education type - Commerce
Sample Size	11	26
Mean	6.363636	5.076923
Std.Dev.	1.747726	1.741794
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	-2.0518 (T-value)	
p-value	0.023863	
Power	0.643219	
Decision	Reject H₀	

Based on the p-value achieved which was less than 0.05, reported to be 0.023863, this implies that we should reject the null hypothesis and accept the alternative hypothesis.

We can conclude that the results from Table 28 and 29 indicate that entrepreneurs with a Science background had the highest revenue growth.

5.6.7 The Impact of Environmental Scanning Activity on Revenue Growth

- **Hypothesis 7:**

H0: higher environmental scanning activities do not lead to higher revenue growth

H1: higher environmental scanning activities lead to higher revenue growth

Using t-tests

Table 30: t-test Results for Hypothesis 7

Variables	Environmental scanning activities for high revenue growth entrepreneurs	Environmental scanning activities for low revenue growth entrepreneurs
Sample Size	59	59
Mean	5.559322	5.423729
Std.Dev.	1.523055	1.868093
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	0.4321 (T-value)	
p-value	0.666463	
Power	0.071291	
Decision	Do not Reject H₀	

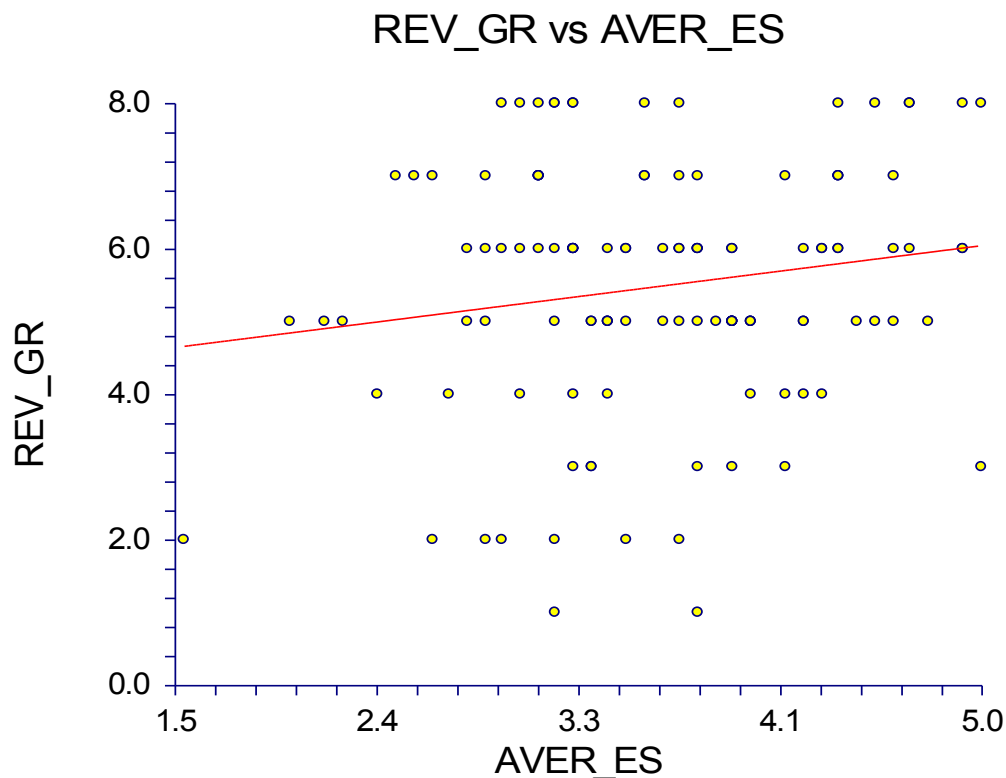
Since the p-value of 0.666463 is higher than 0.05, one can conclude that there is no relationship between revenue growth and environmental scanning activities. This implies that there is no difference in revenue growth between entrepreneurs who scan the environment and those who do not.

Using Regression Analysis

In order to better understand the data, it was decided to perform a linear regression with revenue growth as the dependent variable and environmental scanning activities / modes as the independent variable.

The results are presented below.

Figure 5.13: Regression Analysis Graph of Revenue Growth Rate and Environmental Scanning Activities



<i>Intercept</i>	4.0495
<i>Slope</i>	0.3999
<i>R-Squared</i>	0.0272
<i>Correlation</i>	0.1649
<i>Mean Square Error</i>	2.830277

Where the regression analysis gives a high value, this will indicate that the Independent Variable explains a lot of the variance in the Dependent Variable, and vice versa.

At the 5% significance level, the R-Squared is 0.0272. This means that only about 3% of

the variance in revenue growth is explained by the environmental scanning mode .This is a weak relationship which means that other variables explain the relationship between revenue growth and environmental scanning activity. This result validates the t-test result.

The Impact of Environmental Scanning Mode on Revenue Growth

- **Hypothesis 8:**

H0: There is no relationship between revenue growth and environmental scanning modes

H1: There is a relationship between revenue growth and environmental scanning modes

The null hypothesis under Objective 8 states that a higher environmental scanning mode does not lead to revenue growth. The alternative hypothesis states that a higher environmental scanning mode leads to higher revenue growth.

Table 31: t-test Results for Hypothesis 8

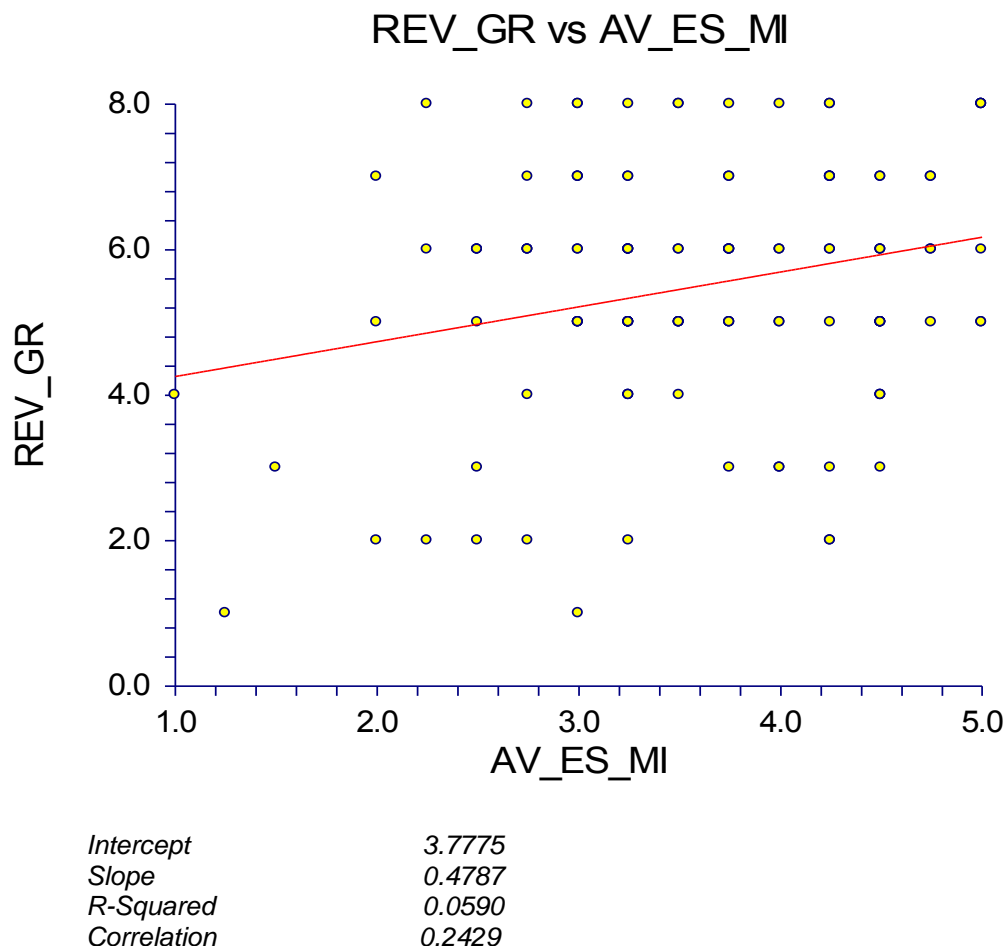
Variables	Environmental scanning modes for high revenue growth entrepreneurs	Environmental scanning modes for low revenue growth entrepreneurs
Sample Size	60	58
Mean	5.683333	5.293103
Std.Dev.	1.545816	1.835408
Normality	Cannot reject normality	
Variance	Cannot reject equal variances	
Test	Equal-Variance T-Test	
Test Statistic	1.2508 (T-value)	
p-value	0.213537	
Power	0.236590	
Decision	Do not Reject H₀	

Since the p-value of 0.213537 is higher than 0.05, one can conclude that there is no relationship between revenue growth and environmental scanning modes. This implies that there is no difference in revenue growth between entrepreneurs who scan the environment using formal and informal modes of scanning and those who do not.

In order to better understand the data, it was decided to perform a linear regression with revenue growth as the dependent variable and environmental scanning activities / modes as the independent variable.

The results are presented below.

Figure 5.14: Regression Analysis Graph of Revenue Growth Rate and Environmental Scanning Modes



At the 5% significance level, the R-Squared is 0.0590. This means that only about 6% of the variance in revenue growth is explained by the environmental scanning mode. This

is a weak relationship which means that other variables explain the relationship between revenue growth and environmental scanning modes. This result validates the t-test result.

5.7. Summary

The results of the data analysis presented in this chapter can be summarised into the following aspects as shown in Table 32:

Table 32: SUMMARY OF RESULTS

Details	Results
Preliminary Data Analysis	
Preliminary data analysis on response rate, response bias, and missing data from sample	<ol style="list-style-type: none"> Response rate was 100% No potential response bias 12 items were missing (insignificant)
Survey Reliability	
Analysis of survey reliability – internal consistency assessment	<ol style="list-style-type: none"> Chronbach alpha for environmental scanning activities was 0.863 Chronbach alpha for environmental scanning mode was 0.732
Exploratory Data Analysis	
<p>Exploratory data analysis described the characteristics of the sample in terms of:</p> <ol style="list-style-type: none"> Gender Age of Founder Level of Education Type of education Revenue Growth Rate Proportion of Entrepreneurs who agree with that Environmental Scanning is important in managing their business 	<ol style="list-style-type: none"> Gender: 84% of the respondents were male and 16% were female. Age of Founder: <ul style="list-style-type: none"> 23% of respondents started businesses between the ages of 26 and 30 years of age; 21% between the ages of 31 and 35 years of age and 21% between the ages of 36 and 40 years of age. Level of Education: <ul style="list-style-type: none"> 33% of respondents had a bachelor’s degree 22% had High School 16% had an Honours degree 15% had a Master’s degree 12% had a Certificate 2% had a Doctorate Type of Education: <ul style="list-style-type: none"> 41% of respondents had Other types of qualifications 20% had a Business qualification 17% had an Engineering qualification 9% had a Computer Science degree 6% had an Art degree 2% had Social Science 2% had a Teaching qualification

	<ul style="list-style-type: none"> - 1% had a Nursing qualification <p>5. Revenue Growth Rates:</p> <ul style="list-style-type: none"> - 25.6% of respondents had moderate to high revenue growth rates - 24.8% had moderate growth rate - 14% had high growth rates - 12.4% had very high growth rates - 7.4 % had moderate to low growth rates - 5.8% had low growth rates - 5.8% had stagnant growth rate - 1.7% had declining growth rates
	<p>6. Proportion of Entrepreneurs who agree with Environmental Scanning:</p> <ul style="list-style-type: none"> - 89% Agreed - 8% Somewhat agreed - 3% Strongly agreed
Correlation Analysis	
<p>The correlation analysis was performed on the following relationships:</p> <ol style="list-style-type: none"> 1. Environmental Scanning Activities and Environmental Scanning Modes 2. Revenue Growth and Environmental Scanning Activities 3. Revenue Growth and Environmental Scanning Modes 	<ol style="list-style-type: none"> 1. The relationship between Environmental Scanning Activities and Environmental Scanning Modes is moderately strong (0.5759). 2. The Relationship between Environmental Scanning Activities and Revenue Growth is weak (0.164920). 3. Although the relationship between Environmental Scanning Mode and Revenue Growth is weak (0.242856), there is a stronger correlation than the correlation between Environmental Scanning Activities and Revenue Growth.
Hypothesis Testing	
<p>Hypothesis 1: Impact of the level of education on environmental scanning activities</p>	<ul style="list-style-type: none"> - Entrepreneurs with High School education scan less than entrepreneurs with Certificate, Masters or Doctorate levels of education. - Entrepreneurs at Certificate level had the highest average environmental scanning activities rating (3.933). The highest is 5. Whilst entrepreneurs with a Master’s degree or Doctorate had the next highest average rating of 3.745.
<p>Hypothesis 2: Impact of the type of education on environmental scanning activities</p>	<ul style="list-style-type: none"> - Entrepreneurs with a Science educational qualification scan more than entrepreneurs with other educational qualification as they had the highest mean rating as measured on the Likert scale (3.728). - From the t-tests performed: Entrepreneurs with a Science qualification scan more than entrepreneurs with a professional qualification and entrepreneurs



	with other qualifications.
Hypothesis 3: Impact of the level of education on environmental scanning modes	<ul style="list-style-type: none"> - The ANOVA test indicated that there is a significant relationship between an entrepreneur’s level of education and the entrepreneur’s environmental scanning mode. - The t-tests indicated that entrepreneurs with High School have the lowest mode of scanning as compared with entrepreneurs who have studied further.
	<ul style="list-style-type: none"> - There is no difference between the environmental scanning modes of entrepreneurs with a Certificate and above.
Hypothesis 4: Impact of the type of education on environmental scanning modes	<ul style="list-style-type: none"> - The ANOVA test indicated that there is a no significant relationship between an entrepreneur’s type of education and the entrepreneur’s environmental scanning mode. - The t-tests indicated that entrepreneurs with Commerce or Professional qualifications have higher modes of scanning as compared with entrepreneurs with Other qualifications. This is not a good result as ‘Other Qualifications’ is not defined. - The descriptive statistics indicate that entrepreneurs with a Science qualification had the highest mean for environmental scanning mode of 3.791667.
Hypothesis 5: Impact of education level on revenue growth rate	<ul style="list-style-type: none"> - The ANOVA test indicated that there is a no significant relationship between an entrepreneur’s level of education and the entrepreneur’s revenue growth rate. - The descriptive statistics indicate that entrepreneurs with an Honours degree had the highest average revenue growth rate of 6.111, with the lowest average being attained by entrepreneurs with a High School level of education.
Hypothesis 6: Impact of education type on revenue growth rate	<ul style="list-style-type: none"> - The ANOVA test indicated that there is a no significant relationship between an entrepreneur’s type of education and the entrepreneur’s revenue growth rate. - The t-tests indicate that entrepreneurs with a Science qualification achieved highest revenue growth rate



	than all the rest of the qualifications. This result is further confirmed in the descriptive statistics, which indicate that entrepreneurs with a Science qualification achieved the highest average growth rate of 6.36, with the lowest being achieved by entrepreneurs with a Commerce qualification.
Hypothesis 7: Impact of environmental scanning activities on revenue growth	- The t-tests indicate that there is a no significant relationship between an entrepreneur's environmental scanning activities and revenue growth rate.
Hypothesis 8: Impact of environmental scanning modes on revenue growth	- The t-tests indicate that there is a no significant relationship between an entrepreneur's environmental scanning modes and revenue growth rate. -

The following chapter analyses and discusses these findings in more detail.

6. DISCUSSION OF RESULTS

6.1 Introduction

This chapter discusses the results of the data analysis presented in Chapter 5. The interpretation of the results is facilitated by insights gained in the literature review which is presented in Chapter 2. The objective of the discussion is to provide in-depth insights into the findings in light of both the context of the study and in light of the literature review. This will be done in terms of elaborating on the acceptance or rejection of hypotheses 1 to 8.

6.2 Descriptions of the Sample Population

Descriptive for Gender and Age

The sample population was made up of 84% male and 16% female respondents. There are various schools of thought on why men are more likely to start a business than women. A common finding is that women-owned businesses reportedly underperform male-owned businesses, reflecting their business experience; the time they are willing to dedicate to the business and their risk propensity (Shane, 2008; Verheul, Uhlaner & Thurick, 2005).

The results shown in Figure 5.1 indicate that 63% of the respondents started their businesses when they were between the ages of 20 and 35 years of age and 37% when they were between the ages of 36 and 60 years of age. Globally, most entrepreneurs fall between the ages of 25 and 34 years (Acs et al, 2004), highlighting that new venture

creation is indeed ‘a young man’s game’ (Lévesque & Minniti, 2006). Lévesque and Minniti (2006) suggest that there is a negative relationship between age and entrepreneurial attitude. This could be due to the fact that the older generation is at the peak of its future earning power, as compared to entrepreneurs who work in an uncertain future earnings environment (Lévesque & Minniti, 2006).

Descriptive for Level of Education

The results in Figure 5.2 indicate that 66% of the respondents had a Bachelor’s degree, Honours degree, Masters and Doctorate at inception of their business. It is stated earlier in the literature review that studies have shown that university education is correlated with high rates of new firm creation (Acs & Kallas, 2007).

Descriptive for Type of Education

The results in Figure 5.3 indicate that people with an Art qualification, Nursing or Teaching qualification are unlikely to start their own businesses, as they represent 9% of the sample. One can argue that the nature of their professions do not have a high propensity for risk.

Descriptive for Revenue Growth Rate

The results from Figure 5.4 and Table 1 indicate that 77% of the respondents had moderate to very high revenue growth in the most recent financial year. This suggests that there may be an association between education levels and the growth of the business.

Descriptive for Environmental Scanning

All of the respondents agreed that environmental scanning is important in the management of their businesses, with 89% agreeing; 8% somewhat agreeing and 3% strongly agreeing. This is in line with the literature review which states that entrepreneurs in developing countries place a great emphasis on networking with each other for mutual support and exchange of services and information (McDade & Spring, 2005).

6.3 Research Hypothesis 1

Hypothesis 1 is the relationship between an entrepreneur's Education Level and the entrepreneur's Environmental Scanning Activities. The null hypothesis states that Environmental scanning activities are the same for both less educated and highly educated entrepreneurs. The alternative hypothesis states that environmental scanning activities are high for highly educated entrepreneurs.

Discussion of Findings on Hypothesis 1

It is stated earlier on in the literature review (Chapter 2) that in developing countries, entrepreneurs who start businesses without the requisite skills, education, financial capital and social contacts, usually fail (Acs & Kallas, 2007). Studies have shown that university education is correlated with high rates of new firm creation (Acs & Kallas, 2007). As earlier stated in Chapter 2, the frequent scanning of environmental sectors provides the firm with current information and the agility to adapt to changing environmental conditions more rapidly than does infrequent scanning (Beal, 2000).

The section in the questionnaire on environmental scanning activities comprised 13 items (refer to appendix 1). The response categories for these items were such that "1"

was for disagree and “5” for strongly agree. The results of the analysis indicate that, of the 121 respondents in the sample 86% of them agreed with the practice of scanning the environment in the management of their businesses; 8% somewhat agreed and 3% strongly agreed. The results confirm the importance of environmental scanning in the running of a business. The pie chart of the proportions of education levels (Figure 5.2) of the respondents shows that a material 66% of the respondents had a minimum qualification of a bachelor’s degree. This confirms the direct relationship between education levels and entrepreneurial success as indicated by the reported high revenue growth rates which are skewed to the right as indicated in Figure 5.4.

From the ANOVA results in Table 6, the p-value achieved was more than 0.05, reported to be 0.204876. This implies that the H₀ is not rejected (i.e. there is no relationship between education level and environmental scanning activities). Since no relationship could be found between the levels of education an entrepreneur has and his / her environmental scanning activities, the t-test were used to ascertain whether there were any differences between the means of individual education levels

From the t-test results in Table 8 and 9, the p-value achieved was 0.012079 and 0.020199 respectively. This implies that H₀ is rejected and H₁ is supported (i.e. environmental scanning activities are higher for highly educated entrepreneurs). The findings for the t-test indicated that entrepreneurs with High School education scan less than entrepreneurs with a Certificate, Masters or Doctorate level of education.

The descriptive statistics in Table 5 indicated that entrepreneurs at Certificate level had the highest average environmental scanning activities rating (3.933), whilst

entrepreneurs with a Master's degree or Doctorate had the next highest average rating of 3.745.

From the discussed results, there appears to be no strong relationship between education levels and environmental scanning activities. This could be due to the fact that previous studies showing strong evidence of a positive association between higher levels of education and higher entrepreneurial activity rates were located in high-income countries (Acs et al, 2004). Orford et al (2004) and Acs et al (2004) suggest that in low-income countries, such as South Africa, those with lower levels of education are more likely to start businesses, possibly because there is more pressure to develop businesses (Escher, Grabarkiewicz, Frese and van Steekelenberg, 2002). This could explain why the results did not indicate a linear relationship between the levels of education and environmental scanning, and instead indicated that entrepreneurs with a Certificate qualification scan the environment more than those with higher qualifications.

6.4 Research Hypothesis 2

Hypothesis 2 is the relationship between the Type of Education an entrepreneur has and the Environmental Scanning Activities that the entrepreneur adopts. The null hypothesis states that Environmental Scanning Activities are the same for all Types of Education. The alternative hypothesis states that Environmental Scanning Activities are higher for certain types of education.

Discussion of Findings on Hypothesis 2

From the literature review (Chapter 2), Baumol et al. (2009) argue that innovative entrepreneurs require some special skills and even particular types of education to achieve entrepreneurial success. This argument suggests that there could be a relationship between the environmental scanning activities that an entrepreneur adopts and the type of education the entrepreneur has.

The bar chart and line chart plotting the types of education and environmental scanning activities (Figure 5.6) indicates that entrepreneurs with Social Science and Computer Science qualifications scan the environment more than entrepreneurs with the other types of education. Table 9 indicates that on average, entrepreneurs with a Science qualification scan the environment more than all the other types of qualifications, whilst entrepreneurs with a Professional qualification (engineering) scan the least.

From the ANOVA results in Table 10, the p-value achieved was significantly more than 0.05, reported to be 0.389987. This implies that the H₀ is not rejected in favour of the null hypothesis (i.e. Environmental scanning activities are the same for all types of education). Since the ANOVA results contradict the descriptive statistics, t-tests were conducted to validate the results.

From the t-test results in Table 12 and 13, the p-value achieved was 0.022868 and 0.037575 respectively, which implies that H₀ is rejected and H₁ is accepted. The results from Table 12 indicated that entrepreneurs with a science qualification scan more than entrepreneurs with a Professional qualification (engineering and nursing). The results

from Table 13 indicate that entrepreneurs with a science qualification scan the environment more than those with other qualifications.

The results from this hypothesis could be explained by the simple fact that learning and teaching are key concepts in the life of a Scientist. True scientists always reserve a time slot on their weekly schedule for updating themselves with the latest developments in their field of study. Scientists learn from each other. That is the reason why scientific seminars, conferences and workshops are common practices in the scientific community; and that is why we have thousands of scientific journals. These qualities render a scientist an avid scanner as the scientist is familiar with the practice of scanning the environment.

The engineers scan the least and yet engineering and science are two very similar studies. Both engineers and scientists think and work very similarly. For example, both engineers and scientists use math, creativity, logic, and measurability (reliable evidence). The only difference is that engineers can affect (change) the social system more easily than scientists. In addition to scientific judgments, their decisions may involve social or personal values. The engineers interviewed in this study were mainly within the construction industry. Since the construction industry qualifies as a mature industry, environmental scanning would not be a key focus area for an entrepreneur in that sector. This suggests that if the engineers were involved in another industry, they could have displayed the same scanning properties as the scientists.

6.5 Research Hypotheses 3

Hypothesis 3 is the relationship between the Level of Education an entrepreneur has and the Environmental Scanning Modes that the entrepreneur adopts. The null hypothesis states that Environmental Scanning Modes are the same for all Levels of Education. The alternative hypothesis states that Environmental Scanning Modes are higher for entrepreneurs with a higher level of education.

Discussion of Findings on Hypothesis 3

From the literature review, Wei Choo (1999) argues that environmental scanning involves the gathering and analysing of information about the external environment in a way that can assist management to plan for the venture's future. Since scanning covers stakeholders, and also includes the technological environment, economic conditions, political and regulatory environment as well as social and demographic trends, the question is whether the level of education is directly related to the extent to which an entrepreneur is able to cover all the mentioned areas.

From the ANOVA results in Table 14, the p-value achieved is less than 0.05, reported to be 0.034250. This implies that the H₀ is rejected in favour of the alternative hypothesis, H₁ (i.e. the mode of scanning is higher for highly educated entrepreneurs). This indicates that there is a significant relationship between an entrepreneur's level of education and his / her environmental scanning modes.

The results from the t-tests in Tables 16, 17, 18 and 19 indicate that entrepreneurs with education level 1 (high school) have a low mode of scanning as compared to entrepreneurs who have either a Certificate, a Bachelor's degree, an Honours degree, a Master's degree or Doctorate. This result further confirms the fact that there is a direct relationship between the mode of scanning and an entrepreneur's level of education, although a linear relationship has not been established (the higher the education the level, the greater the modes of scanning).

A possible explanation for these results could be the fact that, in developing countries opportunities are characterised by lower levels of competitive intensity unlike the developed countries where opportunities are scarce and competition is fierce (Lingelbach, De La Vina & Asel, 2005). In addition to this, most entrepreneurs in developing countries have no or little access to useful informal or formal networks (Morris and Zahra, 2000). Although competitive threats are reduced, entrepreneurs in developing countries diversify their business opportunities as they are exposed to uncertainties in the economy, political arena and regulatory framework (Lingelbach et al, 2005). This is the case in South Africa, where they have found that most entrepreneurs operate more than one business simultaneously (Hudson, Gordon and Tiljaard, 2006).

6.6 Research Hypotheses 4

Hypothesis 4 is the relationship between the Type of Education an entrepreneur has and the Environmental Scanning Modes that the entrepreneur adopts. The null hypothesis states that Environmental Scanning Modes are the same for all Types of Education. The

alternative hypothesis states that Environmental Scanning Modes are higher for certain types of education.

Discussion of Findings on Hypothesis 4

The Environmental Scanning Modes section of the questionnaire comprised 4 items (refer to Appendix 1). The questions divide the sources of information in environmental scanning into written sources of information from inside and outside the organisation and personal contacts from inside and outside the organisation. These questions can be put into two categories, namely formal and informal sources. From the literature review Daft et al (1988) found that multiple sources of information were the appropriate system for a chief executive. The question on whether this system would be appropriate for entrepreneurs is answerable by looking at literature, where Birley (1985) argues that entrepreneurs are more likely to use informal than formal relationships.

The bar chart plotting the average score for environmental scanning modes for the different types of education given in Table 21 indicates that entrepreneurs with a Humanities qualification had the highest average environmental scanning mode, followed by entrepreneurs with a Professional and Science qualification respectively. A possible reason for this variation could be the fact that people with a Humanities background read widely and are generally networkers.

The results from the t-tests in Tables 22 and 23 indicate that entrepreneurs with either a Commerce qualification or a Professional qualification use environmental scanning modes to scan their environments for opportunity identification, more than those with

other qualifications. This is not a strong result as “other” qualifications are not defined, although the result is in line with the tabulated results from Table 21.

From the ANOVA results in Table 18, the p-value achieved was more than 0.05, reported to be 0.221877. This implies that H₀ is not rejected in favour of the alternative hypothesis, H₁ (i.e. the mode of scanning is the same for all types of education). This further confirms the fact that there is no significant difference in environmental scanning modes of the different types of modes of scanning.

6.7 Research Hypothesis 5

Hypothesis 5 looks at the relationship between the Level of Education an entrepreneur has and Revenue Growth Rates. The null hypothesis states that revenue growth rate is the same for all levels of education. The alternative hypothesis states that organisations run by entrepreneurs with a high level of education achieve higher revenue growth rates

Discussion of Findings on Hypothesis 5

Beal (2000) contends that frequently scanning the environment is positively related to the competitive strategy of a firm. By achieving a good competitive strategy, the firm is more likely to grow the firm. Robinson and Sexton (1994) contend that returns on education are higher for self-employed people, who gain from increased self-efficacy as well as entrepreneurially relevant skills. This literature suggests that there should be a positive relationship between the level of education and revenue growth rates. This is highlighted by the fact that of the range of revenue growth rates achieved by the respondents, the results from the responses show that 77% of the respondents had

moderate to very high revenue growth rates. Further, the sample was made up of highly educated respondents, with 66% of them having a minimum of a Bachelor's degree and above, and 78% having a minimum qualification on a Certificate and above.

The bar chart measuring revenue growth rates at the different levels of education shows that the highest revenue growth rate was achieved by entrepreneurs with Honours degrees; with the lowest being for entrepreneurs with high school qualifications. From the ANOVA results in Table 18, the p-value achieved was more than 0.05, reported to be 0.505105. This implies that H_0 is not rejected in favour of the alternative hypothesis, H_1 (i.e. revenue growth rate is the same for all levels of education). The ANOVA results did not confirm similar results as the p-value was significantly more than 0.05.

From the results obtained, this means that although a linear relationship between the levels of education and growth rates could not be established, the results confirm that since the respondents are generally highly educated, there should not be a significant difference between the revenue growth rates at the different levels of education. The fact that entrepreneurs with high school qualification had the lowest average revenue growth rate, further confirms this notion. Also, the fact that the average growth rate was not significantly less than the growth rate among entrepreneurs with higher levels of education, further confirms the characteristics of entrepreneurs in developing countries, as discussed in hypothesis 1, where Orford et al (2004) and Acs et al (2004) suggest that in low-income countries, such as South Africa, those with lower levels of education are more likely to start businesses,

6.8 Research Hypotheses 6

Hypothesis 6 is the relationship between the Type of Education an entrepreneur has and Revenue Growth Rates. The null hypothesis states that revenue growth rates are the same for all types of education. The alternative hypothesis states that organisations run by entrepreneurs with a certain type of education achieve higher revenue growth rates

Discussion of Findings on Hypothesis 6

The bar chart plot in Table 5 measuring revenue growth rates at the different types of education shows that the highest revenue growth rate are achieved by entrepreneurs with a Science qualification; with the lowest attained by entrepreneurs with a Commerce qualification. From the ANOVA results in Table 24, the p-value achieved was more than 0.05, reported to be 0.237591. This implies that H₀ is not rejected in favour of the alternative hypothesis, H₁ (i.e. revenue growth rate is the same for all types of education). The ANOVA results indicate that there is no significant relationship between an entrepreneur's type of education and his / her revenue growth rate.

The results from the t-tests in Tables 26 and 27 indicate that entrepreneurs with a Science qualification achieved higher growth rates than entrepreneurs with a Commerce qualification and with other qualifications.

The t-tests confirm the descriptive statistics - that entrepreneurs with a Science qualification achieve higher revenue growth rates. The results could suggest that high revenue growth rates are achieved by scientists by virtue of the characteristics they

portray, namely, they rely on verifiable, measurable, valid evidences; scientific decisions or evaluations are not affected by human feelings, past experience or beliefs; they have a good grasp of the numbers and what they mean (Grad 501 Research Skills in Engineering). The relationship between Science and revenue growth could be due to the nature of the business. In this case, the related business is Information Technology (refer to appendix 1 for the questionnaire), and with the continuous changes taking place in IT, environmental scanning is a necessity to achieve positive revenue growth rates.

6.9 Research Hypotheses 7

Hypothesis 7 looks at the relationship between an entrepreneur's environmental scanning activities and the Revenue Growth Rates he achieves. The null hypothesis states that revenue growth rate is the same for entrepreneurs who scan the environment and those who do not. The alternative hypothesis states that revenue growth is higher for entrepreneurs who have higher environmental scanning activities.

Discussion of Findings on Hypothesis 7

From the results of the t-tests, the p-value of 0.666463 is higher than 0.05, which indicates that there is no relationship between revenue growth and environmental scanning activities. This implies that there is no difference in revenue growth between entrepreneurs who scan the environment and those who do not. Zahra et al (2002) argued that an effective competitor analysis system is more beneficial for corporate than for individual ventures. Zahra's argument helps explain the results of the findings, as the

study focuses on entrepreneurs who are between 2 and 10 years and most of them have thus not grown to corporate level.

6.10 Research Hypotheses 8

Hypothesis 8 looks at the relationship between environmental scanning modes and revenue growth rates. The null hypothesis states that revenue growth rates are the same for entrepreneurs who have a high or a low mode of scanning the environment. The alternative hypothesis states that revenue growth is higher for entrepreneurs who have a high mode of scanning the environment.

Discussion of Findings on Hypothesis 8

From the results of the t-tests, the p-value of 0.213537 is higher than 0.05, which indicates that there is no relationship between revenue growth and environmental scanning modes. Greve and Salaff (2003) argue that the resources that individuals obtain through their relationships with others, appears to be positively associated with entrepreneurial success. A possible explanation for the negative result could be due to the fact that entrepreneurs in general are not aware of the range of entrepreneurial support available to them from government programmes, and those who are aware complain about the inaccessibility and bureaucratic nature of government programmes (World Bank, 2007). Coupled with this, the argument held by Orford et al (2004) could hold. Orford et al (2004) argue that in low-income countries people with lower levels of education are more likely to start businesses. This contention is supported by hypothesis 3 where a relationship between the level of education and environmental scanning modes was established.

6.11 Summary

In conclusion, based on the ANOVA, t-tests, Bar and Pie charts for each of the variables, there is evidence to suggest that there are other factors that contribute to the relationship between the education (type and level) and environmental scanning (activities and mode). This is evidenced by the fact that the null hypothesis was only rejected in one ANOVA test, and of the 80 t-tests, only 12 rejected the null hypothesis in favour of the alternative, which is what this research was trying to ascertain. Most of the p-values for both the ANOVA and t-tests were significantly higher than 0.05.

Of the results where the null hypothesis was rejected, the descriptive statistics from the bar and pie charts, confirmed the results. This means that we can accept the alternative hypothesis where that occurred. The following conclusions can be made:

- The results for hypothesis 1 (relationship between education level and environmental scanning activities) indicated that entrepreneurs with High School education scan less than entrepreneurs with a Certificate, Masters or Doctorate level of education. There was no significant difference between the scanning activities of the higher education levels. This result does not signify a strong relationship between environmental scanning and education level. A possible reason for the weak relationship may be the fact that strong relationships between education level and environmental scanning activities exist in high-income countries (Acs et al, 2004) but may not exist in low-income countries.

- Hypothesis 2 (relationship between the type of education an entrepreneur has and the environmental scanning activities that the entrepreneur adopts) test results indicate that entrepreneurs with a Science qualification scan the environment more than the other types of qualifications. A possible explanation for this finding could be the fact that scientists have an enquiring mind, and tend to be familiar with the practice of scanning the environment to keep abreast of the latest scientific discoveries.
- Hypothesis 3 (relationship between the level of education an entrepreneur has and the environmental scanning modes that the entrepreneur adopts) test results indicated that there is a significant relationship between an entrepreneur's level of education and his / her environmental scanning modes. Results from the t-tests indicated that entrepreneurs with education level 1 (high school) have a low mode of scanning as compared to entrepreneurs who have higher levels of education.
- Hypothesis 4 (relationship between the type of education an entrepreneur has and the environmental scanning modes that the entrepreneur adopts) test results indicated that entrepreneurs with either a Commerce qualification or a Professional qualification use environmental scanning modes to scan their environments for opportunity identification, more than those with other qualifications. This is not a strong result as "other" qualifications are not defined. The results from the ANOVA tests where the null hypothesis was not rejected, further confirm that no significant relationship was found between environmental scanning modes and types of education.

- Hypothesis 5 (relationship between the level of education an entrepreneur has and the revenue growth rates that are achieved by his venture) results indicated a non-linear relationship between the levels of education and revenue growth rates. Entrepreneurs with high school qualification had the lowest average revenue growth rate than the higher levels of education.
- Hypothesis 6 (relationship between the type of education an entrepreneur has and the revenue growth rates achieved in the venture) test results indicated that the highest revenue growth rate were achieved by entrepreneurs with a Science qualification; with the lowest being attained by entrepreneurs with a Commerce qualification. The t-tests confirm the descriptive statistics, that entrepreneurs with a Science qualification achieve higher revenue growth rates.
- Hypothesis 7 (relationship between an entrepreneur's environmental scanning activities and the revenue growth rates achieved in the venture) results indicated that there is no relationship between revenue growth and environmental scanning activities.
- Hypothesis 8 (relationship between environmental scanning modes and revenue growth rates) results from the tests indicated that there is no relationship between revenue growth and environmental scanning modes.

7. CONCLUSION

7.1 Introduction

Based on the findings on the hypotheses, this chapter looks at the conclusions that can be derived from the relationships between education, environmental scanning and revenue growth as depicted in Chapter 3. Recommendations based on these findings and the literature review are made to the government and the business community. The chapter finally explores some recommendations for future research.

7.2 Main Findings and Conclusions

Research on the personal demographics of entrepreneurs has been criticised for being theoretical (Vecchio, 2003), particularly with respect to the establishment of associations between entrepreneurial behaviours and demographic characteristics (Vecchio, 2003). This critical point may hold true to certain aspects of this research, as the expected results were not achieved. For instance, although the initial purpose of the research was to test the relationship between education (levels and types) and environmental scanning (activities and modes), it also shed some light into the effect of a nation's income levels on that relationship. The relationship holds true in high-income countries, but does not hold in low-income countries such as South Africa, where individuals with low levels of education are more likely to start ventures due to financial pressures (Escher et al, 2002).

Vecchio's point may further hold in the case of environmental scanning activities, where the results indicated a weak relationship between environmental scanning and

education levels. The entrepreneur in a developing country is often exposed to uncertainties in the regulatory, economic and political environment that the venture is operating in, and will always try and mitigate those risks by diversifying the portfolio of ventures to meet cash-flow requirements (Lingelbach et al, 2005). This finding is prevalent in South Africa, as most successful entrepreneurs operate more than one venture at any given time (Hudson et al, 2006). The literature suggests that, although entrepreneurs in South Africa scan the environment for other opportunities, they do that to diversify their portfolios in the uncertain environment they are operating in, thus the weak relationship between levels of education and environmental scanning activities.

An interesting finding was the fact that entrepreneurs with a Science background achieved the highest revenue growth rates and the highest environmental scanning activities, as compared to other types of education. The possible reason as explained in Chapter 6, may be due to the characteristics of Scientists in that they have enquiring minds and understand the numbers. Another possible reason is that, the results may have been skewed due to the fact that Scientists in this study are in the Information Technology industry, which is a highly dynamic industry. To keep abreast of changes and be competitive, the entrepreneur must constantly scan the environment. Future studies could test across a wider range of industries, to validate this finding.

Another interesting finding is that entrepreneurs with a high school qualification engage in less environmental scanning activities and have lower modes of environmental scanning than entrepreneurs with a Certificate qualification and above. Further,

entrepreneurs with a high school qualification achieve lower revenue growth rates than entrepreneurs with higher qualifications. There were no significant differences found between the higher levels of education. The contributing factor to these findings may be due to the fact that most owners of South African businesses tend to be better educated than the general population (Maas & Herrington, 2006), which may explain the non-linear relationship between the dependent (environmental scanning activities and modes and revenue growth rate) and independent variables (education level and type). No other significant relationships were found.

From the findings of the research study, the main conclusion is that entrepreneurs need to have a minimum of a Certificate qualification in a relevant discipline to be avid environmental scanners, and that there is no direct linear relationship between education level and environmental scanning. This is due to other factors being excluded from the analysis, such as the demographics of the country in which the venture is operating. Maas & Herrington (2006) stated that one of the most important findings in literature is that potential entrepreneurs lack the mind-set and skills to become true entrepreneurs. They further stated that, although there is a positive entrepreneurial culture starting from a macro level in South Africa, entrepreneurship on a micro level is not showing signs of growth as international markets are not being penetrated and employment creation is not being encouraged. The low levels of educational qualifications may be a key reason for this problem (Maas & Herrington, 2006).

7.3 Recommendations

These recommendations are based on the findings and the literature reviews and are directed mainly to the business community and government institutions. Resolving the unemployment problem in South Africa, in line of the current global recession, requires a joint effort from both the public and private sector.

What should be the role of Government?

Level of Education- Environmental Scanning Activities, Environmental Scanning Modes and Revenue Growth Rate

The research study found that there was a significant relationship between an entrepreneur's level of education and their environmental scanning modes. Differences were found between high school education and higher levels of education. Further findings indicated that there was no significant difference between the scanning activities of the higher education levels but differences were found between entrepreneurs with high school and higher levels of education. A non-linear relationship between the levels of education and revenue growth rate was found in this research study, with entrepreneurs with high school qualification having the lowest average revenue growth rate.

The suggested reason for these findings is that strong relationships between education level and entrepreneurial success have been found to only exist in high-income countries

(Acs et al, 2004). A number of studies have highlighted the low quality of the educational standards in South Africa (Herrington et al, 2008).

Of 30 countries who conducted the national expert's survey in 2008, South Africa had the highest percentage of experts identifying education and training as limiting factors – this was also the finding in 2001 (Herrington et al, 2008). It is disturbing that there has been no improvement in the past seven years. It is therefore critical for the government to come up with pragmatic strategies within their structures which can be implemented to improve the quality of education at many schools in South Africa. The initial focus should be on the schools as they offer the foundation for further studies.

Type of Education - Environmental Scanning Activities, Environmental Scanning Modes and Revenue Growth Rate

The findings from this research study indicate that the type of education does not have an impact on the environmental scanning mode. Further results indicate that entrepreneurs with a Science qualification scan the environment more than entrepreneurs with other types of qualifications and achieved the highest revenue growth rates.

Out of 134 countries which participated in the Global Competitiveness Report 2008 - 2009, South Africa was ranked 132nd in terms of the quality of mathematics and science at secondary and tertiary level (Herrington et al, 2008). These are disturbing findings as Science is an important subject in a child's curriculum, as it provides a learner with the necessary cognitive skills to scan the environment to identify threats and opportunities.

Government should look at improving the quality of mathematics and science, coupled with introducing science parks on a medium scale to help develop students' practical skills. These parks could be introduced through public-private partnerships. The education department should look at including technology in the school curriculum to ensure that pupils are able to make use of Information Technology to scan the environment widely as a global awareness will be achieved.

Environmental Scanning Activities and Environmental Scanning Modes – Revenue Growth Rates

The results indicated that there was no relationship between revenue growth rate and environmental scanning and environmental scanning mode. A positive relationship should have been established if entrepreneurs had the right training programmes that focus specifically on their needs. The government could get involved in that capacity by introducing effective entrepreneurship to form part of the secondary school curriculum. Entrepreneurial education and training by well-trained entrepreneurial trainers and consultants has been shown to have a significant impact on entrepreneurial attitudes and aspirations (Herrington et al, 2008).

What should be the role of Business Community?

Environmental Scanning

In comparison to other developing countries, South Africa suffers from low proportions of opportunity-seeking entrepreneurs, who are more likely to create high growth firms

and employment opportunities (Nicholls-Nixon, 2005). South Africa's rate of opportunity entrepreneurship is currently 3.5% which is alarmingly below the developing-country average of 9.7% (Maas & Herrington, 2006). These statistics call for the business community to establish working partnerships with each other to promote opportunity-seeking entrepreneurship by offering the necessary support to young and up-coming entrepreneurs. These skills will broaden the targeted entrepreneurs' environmental scanning abilities which are imperative to the success of their venture.

Education

With a young population, pressure is being exerted on existing businesses to create jobs and wealth (Herrington et al, 2008). It is therefore imperative that the business community plays an active role in entrepreneurial creation activities.

School systems are currently not producing functionally literate students. Many school-leavers do not have sufficient literacy, numeracy and livelihood skills to be able to participate actively in the economy (Herrington et al, 2008). Those that attempt to engage in business activities lack managerial, technical and marketing skills and are thus at a disadvantage in the competitive business environment. The business community can be involved at a practical level by rolling out adoption schemes of secondary schools through medium to large entities, in a drive to transfer entrepreneurial skills to young people. These schemes will give young people the skills to find avenues to participate in the economy in an effective and meaningful way.

Revenue Growth

In order for entrepreneurs to achieve high revenue growth levels, the business community should actively seek to do business with small enterprises (Audi and Rider, 2005). This could be done through allocating a certain percentage of business interactions to small enterprises. For example, small enterprises could supply goods and services to the large businesses.

7.4 Recommendations for Future Research

The recommendations for future research are based on a combination of the outcomes of this research and on the research limitations of this study. The following research ideas can be pursued:

- The profile of developing country entrepreneurs is different from that of developed countries, and there is little research on developing countries' entrepreneurial activities as compared to developed countries. The big question is what factors of education influence the environmental scanning activities of an entrepreneur in a developing country? This research can be conducted through a quantitative research analysis by profiling the most successful entrepreneurs in a developing country and comparing their profile to unsuccessful entrepreneurs (these may have undergone liquidation or have been liquidated).
- The results indicate that scientists have a positive impact on a venture's performance. It would be interesting to study the characteristics of scientists in the work place, as employees and in a venture as entrepreneurs, to determine where

they excel. The question would be in which environment do they achieve the highest return?

- A strong association between education and environmental scanning could not be found. It would be interesting to study whether the nature of the business would have made a material difference to the results. If the nature of the business requires high levels of environmental scanning would that give the desired result.

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9. APPENDICES

APPENDIX 1: QUESTIONNAIRE

Dear Respondent

Thank you for your willingness to complete this questionnaire. The purpose of the questionnaire is to determine the impact that the level and type of education has on an entrepreneur's environmental scanning activities in growing their business. The questionnaire should not take more than 45 minutes to complete.

This is an anonymous and confidential survey. You cannot be identified and the answers you provide will be used for research purposes only. Since this is a structure interview, feel free to seek clarity as needed.

Please answer all the questions. There are no right or wrong answers.

Q1. For office use [CV = Control variable; IV = Independent variable;
DV = Dependent variable]

Please indicate your Gender

Male	1	CV1 <input type="checkbox"/>
Female	2	



Q2.

Please indicate your age

20 – 25	1
25 – 30	2
30 – 35	3
35 - 40	4
40 – 45	5
45 – 50	6
50 - 55	7
55 – 60	8
60 - 65	9
65 – 70	10
70+	11

CV2 3

Q3.

Indicate your educational qualification level

Doctorate	1
Masters	2
Honours	3
Bachelors	4
Other Tertiary Education	5
Matric	6
High School	7

IV1 3

Q4.

Indicate type of education pursued

Business qualification	1
Engineering	2
Legal	3
Information Technology	4
Finance	5
Retail	6
Marketing	7
Other	8

IV2 3



Q5.

What is the age of your organisation?

2 – 6 years	1
6 – 10 years	2

CV3 3

Q6.

Circle the industry in which your business is categorised in:

Information Technology	1
Advertising / PR	2
Retail (store front) – includes restaurants	3

CV4 3

Q7.

What resources did you have at inception of the business?

Less than R100 000	1
R100 000 – R500 000	2
R501 000 – R1 000 000	3
More than R1 000 000	4

CV5 3

Q8.

From inception to current, what has been the annual percentage revenue growth?

Less than 10%	1
10% - 20%	2
More than 20%	3

DV38

Q9.

From inception to current what has been the annual employee growth rate?

Less than 10%	1
10% - 20%	2
More than 20%	3

DV39

Q10.

How big is your organisation?

Less than R5 000 000 turnover	1
R5 000 000 – R15 000 000	2
More than R15 000 000	3

CV6 3

The following statements describe different permutations of scanning that you may adopt in growing your business. Please read each statement **carefully** and then **circle** your chosen number to indicate the extent to which you agree or disagree with each statement.

Q11	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	For office use only
I scan the environment for the following:						
Competitors' prices	1	2	3	4	5	DV1 <input type="checkbox"/>
Competitors' introduction of new products	1	2	3	4	5	DV2 <input type="checkbox"/>
Competitors' advertising / promotional programs	1	2	3	4	5	DV3 <input type="checkbox"/>
Competitors' entry into new markets	1	2	3	4	5	DV4 <input type="checkbox"/>
New product technologies	1	2	3	4	5	DV5 <input type="checkbox"/>
Customers' buying habits	1	2	3	4	5	DV6 <input type="checkbox"/>
Customers' product preferences	1	2	3	4	5	DV7 <input type="checkbox"/>
Customers' demands and desires	1	2	3	4	5	DV8 <input type="checkbox"/>
Company's advertising and promotions resources	1	2	3	4	5	DV9 <input type="checkbox"/>
Company's sales capabilities / resources	1	2	3	4	5	DV10 <input type="checkbox"/>
Local economic conditions	1	2	3	4	5	DV11 <input type="checkbox"/>
National economic conditions	1	2	3	4	5	DV12 <input type="checkbox"/>

Q11	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	For office use only
National political conditions	1	2	3	4	5	DV13 <input type="checkbox"/>
Q12: Sources of information in environmental scanning	1	2	3	4	5	
I use <u>written sources</u> of information from <u>outside</u> the organisation to scan the environment e.g. Finweek, newspapers, journals, internet, television	1	2	3	4	5	DV34 <input type="checkbox"/>
I use <u>written sources</u> of information from <u>inside</u> the organisation to scan the environment e.g. special studies, reports, memos, management information systems	1	2	3	4	5	DV35 <input type="checkbox"/>
I use <u>personal contacts</u> from <u>outside</u> the organisation to scan the environment e.g. Subordinates, salespeople, staff	1	2	3	4	5	DV36 <input type="checkbox"/>
I use <u>personal contacts</u> from <u>inside</u> the organisation to scan the environment e.g. Subordinates, salespeople, staff	1	2	3	4	5	DV37 <input type="checkbox"/>

APPENDIX 2

Test for Internal Consistency – Environmental Scanning Activity

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.863	13

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ES_ACT1	43.41	71.628	.513	.855
ES_ACT2	43.45	70.549	.564	.851
ES_ACT3	43.64	71.831	.533	.853
ES_ACT4	43.60	69.308	.655	.846
ES_ACT5	42.83	74.756	.471	.857
ES_ACT6	43.27	74.017	.476	.857
ES_ACT7	43.17	73.295	.536	.853
ES_ACT8	42.88	75.537	.463	.857
ES_ACT9	43.94	67.805	.634	.847
ES_ACT10	43.77	70.329	.583	.850
ES_ACT11	43.24	73.967	.523	.854
ES_ACT12	43.31	72.481	.541	.853
ES_ACT13	43.87	74.049	.394	.862

APPENDIX 3

Test for Internal Consistency – Environmental Scanning Mode

Case Processing Summary

		N	%
Cases	Valid	121	100.0
	Excluded ^a	0	.0
	Total	121	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.732	4

Item-Total Statistics

Variable	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ES_M1	10.38	7.438	.513	.677
ES_M2	11.49	6.269	.534	.672
ES_M3	10.26	8.246	.519	.685
ES_M4	10.86	6.622	.560	.648