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Sources of ideas and opportunity identification among entrepreneurs and innovators in South Africa

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DECLARATION

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



(Tina Kabunda Phiri)

Signed at Marais Steyn Park

On the 1st of May 2018

DEDICATION

To my husband Edwin, and our kids Chiluya and Tumelo Phiri.

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First and foremost, I would like to thank God for giving me this opportunity to pursue my MBA studies. I am thankful for His provision in various forms.

Special thanks go to my husband Edwin for his support and to my kids, Chiluya and Tumelo for their patience and understanding.

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ABSTRACT

Innovation and entrepreneurship are quite topical for South Africa given its poor GDP growth performance and the benefits that would flow to the South African population if these activities are consistently and successfully pursued. Even though South African early-stage entrepreneurs remain innovative, innovativeness and entrepreneurship levels are still very low. It is arguable that the low levels of innovation and entrepreneurship are the result of a lack of awareness of the sources of ideas and factors that contribute to the recognition of opportunities.

The purpose of this research was to investigate some of the factors that contribute to the generation of ideas and recognition of opportunities, as well as establish some of the positive aspects and negative aspects of each factor at a holistic level. Qualitative research, in the form of face to face semi-structured in-depth interviews, was conducted with 11 South African innovators and entrepreneurs. The research found that several primary factors contribute to the recognition of opportunities.

The main finding from this research was that the desire to solve problems is a leading factor in the generation of ideas and recognition of opportunities. Of equal importance to opportunity recognition and innovation were goals and aspirations. There was also an emphasis on artistic creativity and adoption as antecedents of innovation. Networking, though not commonly seen as a key factor by some respondents in the identification of opportunities, was also seen as an important precursor for innovation.

Furthermore, the research found that a number of these antecedents may offer unique solutions and benefits, including the acceleration of the identification of ideas and opportunities. On the other hand, none of the antecedents is sufficient for innovation, as each antecedent has a caveat that can restrain innovation and it is important that entrepreneurs and innovators are aware of these restraints.

Also, each of the antecedents potentially offers and allow expert areas of innovation, with innovators becoming very experienced in a particular antecedent as an area of innovation. Consequently, the innovator may continually gravitate towards or focus on

1) artistic creativity, 2) seeking new interests, 3) known problems, 4) goals, 5) science or technology, 6) adoption, 7) synthesis, 8) personal experiences, or 9) networking, to identify opportunities.

The recommendations are that future research can examine whether such antecedent-based ideation, opportunity recognition and innovation specialisation exist among entrepreneurs and innovators, the extent by which innovators specialise in their innovation skills, and the extent by which innovators stick to their type, style, or specialisation of innovation.

Keywords: Opportunity Recognition, Innovation, Problem Solving, Goals, Artistic Creativity, Adoption, Networking, Interests, Technology, First-Person Experience, Synthesis

Introduction

Innovation is important for the survival of businesses, but it is also critical for the economic performance of societies. The unfortunate aspect for South Africa is that innovation levels have declined since 2015 (Herrington, Kew, & Mwanga, 2017), even though South African early-stage entrepreneurs remain more innovative than their African counterparts.

There is a gap in practice with regards to innovation within the business community in South Africa. This view is echoed by Dessus, Goddard, & Hanusch (2017) who reported that, in comparison to 2007, South Africa produced 6% less in 2016, and a critical contributing factor to this deterioration is the insufficient innovation efforts of private firms. Entrepreneurship and innovation present the most suitable opportunities for achieving these goals. What is encouraging about South Africa's situation is that there are entrepreneurs who are keen on seeking good entrepreneurial opportunities, and are opportunity driven (Herrington et al., 2017).

A literature review on innovation highlights some factors that contribute to the generation of ideas and opportunity recognition. The purpose of this research was twofold. Firstly, the research sought to contribute to the current academic literature on the primary factors that contribute to opportunity recognition, and thus innovation. Secondly, the research sought to understand how these factors contribute to innovation - some of the positive aspects and the negative aspects of each contributing factor to provide key insight to entrepreneurs and innovators.

Not much research has been conducted on the factors that contribute to ideation and opportunity recognition at a holistic level, as this topic has generally been overlooked by researchers. This study is significant because it seeks to move entrepreneurship and innovation research forward. In addition, the research provides key insights into the factors that contribute to opportunity recognition, and specifically how the factors contribute to innovation, based on the views of South African entrepreneurs and innovators. These insights can also be used by business managers who are responsible for driving innovation in their organisations.

Definition of terms

The following definitions were adopted for the key terms that were used in this research.

The Entrepreneur: Several definitions of the term entrepreneur exist. According to Baron (2007, p.167), entrepreneurs are people who take action, they "engage in vigorous, persistent efforts to convert their ideas and visions into profitable, operating companies". Ward (2004, p. 185) outlines two important components of the entrepreneur's task as "the generation and exploitation of novel and useful ideas". Drucker (1985, p. 20) notes that "Entrepreneurs need to search purposefully for the sources of innovation, the changes and their symptoms that indicate opportunities for successful innovation".

Innovation: In his book innovation and entrepreneurship, Drucker (1985) asserts that entrepreneurs innovate. He also defined innovation as "the act that endows resources with a new capacity to create wealth" (Drucker, 1985, p. 29). One aspect that Drucker's definition highlights is that innovation doesn't need to be technical because it is also an economic and social term. Norman & Verganti (2014) identify several categories of innovation which include innovation of business models, of products, of services, of processes or institutional arrangements. As a result of this, the study included entrepreneurs across various fields.

Literature Review

While entrepreneurs and business executives understand the value of innovation for the survival of their businesses, not many companies innovate at a level that is sustainable and desirable. This section provides an overview of the literature on the primary factors contributing to innovation, and how the factors help to identify and generate ideas.

The literature surfaced at least nine factors contributing to the generation of ideas and recognition of opportunities that are available to entrepreneurs and innovators. These

are: 1) artistic: creative inspiration, imagination, and objective fantasy, 2) interests, inquisitive journeys and passions (desire to understand something; being passionate about something), 3) solving problems (desire to solve a problem; desire to bring improvement or change), 4) goals, aspirations and values, 5) scientific and technical inquiry or development, 6) adoption (borrowing from other contexts), 7) synthesis and induction (cross-pollination of fields of knowledge; building up concepts), 8) first person experiences and 9) negotiation and networking (partnerships, contacts, relationships).

This section is structured around these nine contributing factors. The literature review will start with an outline of the first contributing factor of innovation and progressively outline all the other factors before ending with an outline of the ninth factor.

Artistic: creative inspiration, imagination, and objective fantasy

Creative inspiration, imagination, and fantasy can aid in the generation of innovative ideas. It is acknowledged that creativity plays a major role in the success of businesses. Baron (2007, p. 169) notes that creativity "involves the development of (1) something new, that did not exist (at least in its present form) before, and (2) something that is not merely new but also appropriate or useful". For Kerr and Lloyd (2008), creativity is concerned with imagination, inventiveness, improvisation, insight, intuition, and curiosity". DiLiello & Houghton (2006) associate creativity with the use of association, analogies, metaphors and intuition.

There are several ways in which creativity can be enhanced, including Breakthrough Thinking (looking at a problem from different perspectives), Object Stimulation and Guided Fantasy (developing new scenarios that encourage the development of new ideas) (McFadzean, 1998a). The nature of the problem can also encourage creativity and fantasy. McFadzean (1998b) states that problems that are ill-structured and open-ended may require more creative thinking and encourage the production of a new idea.

Interests, inquisitive journeys and passions (desire to understand something; being passionate about something)

An interest in something can spark the generation of ideas, which could be innovative. Grant and Berry (2011) state that when employees are intrinsically motivated, their desires to learn, to explore their interests, and to engage their curiosity will lead them to focus on ideas that are novel.

In studying Celtic craftsmen, Fillis (2007) notes that for some, businesses evolved from a part-time interest, pastime or a hobby. Tschang (2003) also refers to Will Wright's years-long research on systems dynamics and other forms which led to his path-defining SimCity, as well as how his research into new architectural paradigms led to the biggest PC game seller in history, The Sims.

Passion also stimulates the generation of innovative ideas and businesses. Glaveanu et al. (2013, p. 8) note that “many scientists also mention their passion for the domain of their choice and the pleasure they derive from working within it … their need to go further in their domain… to arrive at new and different results”.

Solving problems (desire to solve a problem; desire to bring improvement or change)

Problems, stressful situations or unhappiness about something can trigger the generation of ideas to resolve or address those situations. Ardichvili, Cardozo, & Ray (2003) argues that, when problems are known, but solutions are not, they create situations in which structured problem solving occurs, which could lead to the design of a specific product/service to address an expressed market need.

Ward (2004) also notes how the way in which people conceptualise a problem strongly influences their likelihood of achieving an original or creative solution. He argues that very concretely defined problems lead to less novelty but more familiar solutions, while the opposite is the case of very abstractly defined problems.

Discomfort also plays a role in the generation of ideas or inspires innovators. Sutton (2002) notes that many successful ideas were invented because someone got upset about something and then did something about it. He refers to David Levy's invention of a good bicycle seat lock which he developed after he heard a co-worker cursing because a thief had stolen his bicycle seat.

Goals, aspirations and values

Goals can trigger undertakings that lead to the generation of innovative ideas. McFadzean (1998b) states that creative thinkers look into the future and visualise where they would like to be in five or ten years' time. He also notes that wishful thinking, a paradigm breaking technique, forces participants to look at a "perfect future" (McFadzean, 1998b, p.313). In addition, he outlined how, for example, a group of people can be asked to develop a goal that can be attained, assume that everything is possible, and then ask them to create fantasy statements about the future and then develop ideas on how these can be achieved.

Tschang (2003) outlines how some video game designers that they interviewed were driven by a lifelong quest or evolution towards some higher refinement of their games, which was usually based on interactive elements or a similar version. Fantasy also plays a role in the generation of ideas and opportunity recognition. As Tschang (2003) noted from his interviews with leading game designers about what they sought to make in their games, as their careers progressed, the designers reflected more on what made their game fun or standout. In the process, some realised a more complete and consistent fantasy world, while others created multiple optional paths in the game or built experiences that were based on alternate recreations of life. He argues that these goals could be seen as quests that lead the designers to evolve their art and technology to greater forms.

Vise (2007) also notes how aspiration played a key role in the founding of Google because of the co-founder's intense desire to do something innovative.

Scientific and technical inquiry or development

Training, both formal and informal, as well as collaboration with peers, plays an important role in building a scientific culture and the proposition of problems and solutions. Glaveanu et al. (2013, p. 8) state that, as a precondition in science, long years of formal education and “apprenticeships” aid in building a “general scientific culture”. They highlight how reading books and articles, going to seminars and conferences are fundamental to the process. As they engage in these activities, not only are the scientists forced to learn all the time, but they also get to observer the technical progress.

Colleagues and peers also play an important role in the generation of ideas. Discussions with colleagues, according to Glaveanu et al. (2013, p. 8), also “supplement the above effort and help ideas emerge or take shape”. They also state that at times, certain concerns and questions are “in the air” within the scientific community, and scientists pick them up and work on them (Glaveanu et al., 2013; p. 8).

They reject the popular image of the lone genius and argue that “if there is anything that defines scientific work it is the fact that it always happens with others, alongside others, in relation to others” (Glaveanu et al., 2013; p. 8). They highlight how colleagues and peers are the first points of contacts who play a crucial role in various ways. The role they play include proposing problems, formulating ideas, clarifying them, orienting the work as well as evaluating them. Further to this, Glaveanu et al., (2013) state that there is a collective dimension and teamwork in the process of creation and often, it is the case that two or more people work together and have an ongoing critical exchange.

The result of the collective approach and teamwork is that ultimately, it becomes impossible to know who had which ideas. Several factors also shape career. According to Glaveanu et al. (2013), in this domain work advances through meetings and at a broader level. In addition, they argue that scientific careers are shaped by the entourage and the opportunity of working with certain people.

Another aspect that is highlighted in this domain is the role of accidents and surprises. According to Glaveanu et al. (2013, p. 8), “there is in science room for accidents and surprises, unpredictable results”, as well as “theories that need to adapt to the evidence of "experience”. These surprises also generate diverse emotions. For instance, before getting the idea, a feeling of frustration often accompanies the search. Other aspects that are associated with this domain include long periods of testing and formulating, as well as a constant cycle of observation, modelling and retesting (Glaveanu et al., 2013).

Adoption (borrowing from other contexts)

Hargadon and Bechky (2006) argue that individuals facing problematic situations find solutions through a process of analogical reasoning, of trying to make sense of a new situation (the target analogue) by relating it to a more familiar one (the source analogue). Analogical problem solving occurs when an individual recognises similarities in the new situation to old problems (and their solutions) that he or she has learned in the past. Transferring these existing solutions from old problems provides a solution to the new problem. Ideas in one domain or industry may be applied in others.

Ward (2004) also refers to the use of analogue or the mapping of knowledge from a familiar domain to a less familiar one. It is an approach that is for creative developments in science, art, etc. and may also have applicability to entrepreneurship. Lumpkin and Lichtenstein (2005) detail the origins of Starbucks Corporation, which was founded through a reconceptualisation of the U.S. coffee industry by founder Howard Schultz. They mention that based on his 1983 trip to Milan, Schultz recognised an enormous opportunity for Starbucks to recreate the Italian coffee bar culture in the U.S and through this process, he was able to redefine the coffee industry in America.

Game design is another platform where analogical thinking, with regards to mapping past knowledge onto a new situation is also applied (Tschang, 2003). According to Tschang (2003, p. 8), sometimes a game “designer directly uses a metaphor or real-world analogy in a situation, or remembers a past incident that might help this particular design problem”. He argues that in some instances, other forms of analogy are more likely to take place. An example of this is a situation where a designer directly adopts

a feature seen in other games or different form of genre into their game. In support of this view, Tschang (2003) gives an example of one designer, RockStar Games, who reported that he reused ideas wherever possible. And in spite of this, some of the designs he participated in were sometimes considered substantially innovative.

Further to the above, Tschang notes how another designer for Tilted Mill indicated that they tried to "bring as much of the fantasy environment and experience (from either books like Tolkien's or "pencil and paper games") into their games" (2003, p. 8). This, according to Tschang (2003), is a form of analogical thought. He also highlights how, rather than translating from one situation to another, they are translating from a different medium. During this transformation processing, concepts are also transformed. Tschang (2003) asserts that this type of analogical thinking is quite common because games are essentially constructed from the designers' experience of different media.

Still referring to game design, Tschang (2003) highlights how a typical game involves some combination of narrative (i.e., story), character generation, sound, visual effects, and gameplay. Each of these elements present an opportunity to form analogical material in games from their original media such as books, books and movies, movies, music, and other games respectively. In this regard, Tschang (2003) sees designers as constantly relying on their past backgrounds and experiences, including material from side interests in reading, for their design work.

Synthesis and induction (cross-pollination of fields of knowledge; building up concepts)

Baron (2007) argues that concepts can be combined. The outcome from this process is something that is both new and useful. An example for this type of situation related to the time when the concepts of 'telephone' and 'camera' were combined, and thus the idea for cell phones with built-in cameras emerged.

Ward (2004) also makes a similar argument. For instance, he states that work on conceptual combination reveals that when two previously separate concepts or images

are merged into a single unit, novel properties can emerge. What is evident is that these properties were not obviously present in either of the separate components. He argues that the effect of this is particularly strong for dissimilar or divergent concepts, and such novelty can be exploited to develop new product ideas or market niches. McFadzean (1998a) has a similar view on this issue and argues that creativity is enhanced when experience, ideas and diverse elements are mixed together and then transformed using new combinations.

First person experiences

First person experiences are also key in encouraging the generation of ideas. For instance, Tschang (2003) notes that in the game development industry, being a game player is essential to making good, appealing products that resonate with players, and inspiration can come through an act of stimulation.

Lumpkin and Lichtenstein (2005) recall the story of Philadelphia Pharmacy founder, Ost, who found an assistant writing out a prescription by hand, rather than using the computer-generated labelling system. Instead of criticizing her for not following the standard operating procedures, Ost leveraged this knowledge. He decided to introduce a change in routines by translating every computer-generated prescription into Spanish. This ultimately opened up the market for a substantial local clientele.

Horng and Hu (2008) note how culinary artists also tended to be inspired by customers' likes and dislikes and their changing tastes, as well as by the menus of other restaurants. In addition, their reading and viewing of pictures and films, as well as their travel and the experience of other cultures also inspired their trade.

Glaveanu et al. (2013, p. 5) also outline how artists often consider themselves "sponges," "90% of the time in a receptive state", allowing themselves to be "impregnated" by things and people who thus enter an inner "factory of fermentation". They highlight a number of activities that nourish creative impulses and cite activities such as walks, voyages, readings and exhibitions as playing a role in creativity. Creative impulses are also intensified by what they refer to as the "tactile" nature they

seem to possess, where “observation goes through the hand” (Glaveanu et al., 2013, p. 5).

In addition, Glaveanu (2013) draw attention to other characteristics that artists exhibit and highlight how “scriptwriters habitually have the attitude of a “hunter in the forest,” always on the alert, and always taking notes” (2013, p. 10). They state that frequently, the starting point is connected to one’s own history, and this includes the things seen as a child, the lived experience and the people one knows.

Negotiation and networking (partnerships, contacts, relationships)

Networking and relationship building are deemed very important for innovation and business success. Pittaway, Robertson, Munia, Denyer, & Neely (2004) note the importance of business networking for innovativeness. They identify a number of benefits of networking which include “risk sharing; obtaining access to new markets and technologies, speeding products to market; pooling complementary skills; … and obtaining access to external knowledge” (Pittaway et al., 2004, p. 2).

Networking also has an impact on the diffusion of innovations. As outlined by Pittaway et al. (2004), national systems of innovation play an important role in the diffusion of innovations at an institutional level regarding the way in which they shape networking activity. They also highlight how network relationships with suppliers, customers and intermediaries such as professional and trade associations are important factors that affect innovation performance and productivity (Pittaway et al., 2004).

Diversity within networks also plays an important role in the innovation process. This results from engagements with a diverse range of partners which, according to Pittaway et al. (2004, p. 19), “allows for the integration of different knowledge bases, behaviours and habits of thought”. In addition, Pittaway et al. (2004) assert that both formal and informal communication between people with different information, skills and values increase the possibility of unexpected novel combinations of knowledge, which can lead to novel discoveries.

Being part of a broader business and social network also assists in business development. This, according to Fillis (2007) can be seen in the way in which the entrepreneurial owner/ manager makes an effort to visit overseas buyers to collect relevant export information. Fillis (2007) highlights how one craftsman who started off initially by weaving fabric and selling them to the designer labels in Italy and France, was able to travel to Italy and was put in contact with a network of businesspeople in the textile trade.

In addition to the above, Fillis (2007) notes the importance of networking and relationship building for business success. For instance, as well as providing potential sales, craft fair attendance can also serve as a way of collecting information about the market and new product development.

Problem Statement

One of the problems that South Africa faces include low levels of entrepreneurship and innovation. It is possible that the low level of entrepreneurship and innovation in South Africa stems from a lack of awareness of all the different factors that contribute to opportunity recognition, and how these factors contribute to innovation – how the factors help to identify opportunities for entrepreneurship and innovation.

Research Objectives

The literature review suggests that the following factors contribute to opportunity recognition:

- Artistic ways, such as creative inspiration, imagination, or objective fantasy;
- Interests, inquisitive journeys or passions;
- Solving problems - a desire to solve a problem, or to bring improvement or change;
- Goals, aspirations or values;
- Scientific or technical inquiry or development;
- Adoption – generally, borrowing from other contexts;

- Synthesis and induction;
- First person experiences; and
- Negotiation and networking.

The primary objective of this research was to establish which of these factors contribute to opportunity recognition, and thus innovation, according to some of the South African entrepreneurs and innovators. The second objective of the research was to understand how these factors contribute to opportunity recognition and innovation, that is, how they actually affect opportunity recognition. The third objective of the research was to identify some of the positive aspects and negative aspects of each factor that contributes to opportunity recognition and innovation. It is expected that the outcomes from the research will provide potential entrepreneurs and innovators with a framework that they can work with in order to enhance the levels of entrepreneurship and innovation.

Methodology

This section presents an outline of the research methodology that was employed. It starts with an overview of the research paradigm and research design that was used before detailing the population and sample for the research.

Research paradigm

The research methodology that was employed for this research is qualitative research. The nature of the information that is required from research determines the methods that are selected for gathering the information. Kalof, Dan & Dietz (2008) state that the two main research approaches that are used are quantitative and qualitative research. Other scholars such as Creswell (2014) identify a third approach, the mixed method approach.

This methodology that was adopted for this research, qualitative research, seeks to understand the world through the “subjective meanings” that people have of their experiences (Cresswell, 2005, p.8). This type of research is inductive, exploratory in

nature, seeks to develop a theory or pattern of meaning, and relies on the participants' views of the situation. This approach is appropriate for this research because it seeks to gain insight into the innovators and entrepreneurs personal experiences of and views on factors that contribute to the recognition of opportunities, and will provide an opportunity to gain a richer understanding of the participants' own experiences.

Research design

The research was conducted using the semi-structured interviewing methodology, the most widely used method of data collection in qualitative research (Darlington & Scott, 2002; Willing, 2008). This approach was appropriate for this research because it is used to understand the meaning people make of their lives from their own perspective. It also emphasises the fact that people are experts on their personal experience, and are therefore best placed to report on their own experiences of a particular event or phenomenon. Thus, the semi-structured interviews provided the entrepreneurs and innovators with an opportunity to talk about their personal experience with the contributing factors of innovation.

Sample and sampling method

Qualitative researchers need to consider whom (Kuper, Lingard, & Levinson, 2008), and how many respondents to include (Darlington & Scott, 2002). Since it is not always practical to cover the entire population in a study, a sample of the entrepreneurs was used.

The respondents were adults drawn from a population of innovators with significant innovation activities in their field and entrepreneurs in South Africa who have businesses that have been in existence for more than three years. A population, according to Kalof et al. (2008) refers to all the possible units being studied. The criteria for inclusion in the research included the potential respondents' experience of the topic under investigation and ability to clearly articulate themselves. These two factors, according to Darlington & Scott (2002), are commonly regarded as essential criteria for the inclusion of participants in qualitative research projects. The respondents were

drawn from various industries.

Non-probability sampling procedures, purposive sampling and snowballing sampling, were utilised. This type of sampling is useful when a sampling frame for the population in question doesn't exist, as well as merely because a probabilistic approach is not deemed necessary (Blaxter, Hughes, & Tight, 2006). This is usually the case with qualitative research since the aim is not to generalise the results to the entire population but rather to obtain key insights from the participants.

Most of the respondents were identified through a search of LinkedIn for potential people who meet the criteria that were set. A preliminary review of their entrepreneurial and innovative prowess was conducted. Those who fit this criterion were then contacted and asked if they would be interested in taking part in the research. Most of the respondents were founders of businesses and serial entrepreneurs. A few of the respondents were identified through referrals from other qualifying respondents. The referred respondents were vetted to ensure that they met the criteria for inclusion in the research before an invitation to take part in the research was sent.

Procedure for data collection

Each interview was conducted at a date, time and location that was selected by the respondent. This was in line with Darlington & Scott's (2002, p. 103) assertion that interviews are best conducted in a familiar environment, preferably of the participant's choosing and at a place suitable to them. For some of the participants, face to face interviews were conducted, but because of the geographic location of some of the respondents at the time of the interview, some interviews were conducted using Skype video or telephonically.

An email that provided an overview of the purpose of the research and asking for the respondents' participation was sent. The respondents who were interested in taking part in the research provided dates and times which were suitable for the interview. Once a date had been set for the appointment, the researcher sent a formal meeting

request to each respondent, including reminder emails closer to the date. The researcher personally conducted the interviews.

All the interviews where audio recorded using a digital recorder to limit distractions that are associated with note-taking during a semi-structured interview. The recording of interviews is recommended for a number of reasons (Bell, 2005; Darling & Scott, 2002; Willig, 2008), which include the following:

- The interviewer focuses on the topic at hand and pays attention to the responses.
- Recordings enable the researcher to carry out a full analysis of the data once the audio recording has been transcribed.
- Note-taking interferes with eye contact and discourages the development of rapport between the interviewee and the interviewer.

There are drawbacks to recording the interview. For instance, tape recording may affect what some of the participants say, and they may not be entirely comfortable and relaxed in the presence of a tape recorder (Willig, 2008). On the other hand, entrepreneurs and innovators who enjoy being heard normally forget about the recorder within a few minutes.

The in-depth interview guide

An interview guide or schedule was used to serve as a guide for the semi-structured interviews. Willig (2008) alludes to the importance of having questions rather than topic headings before the interview because better formulations of questions may emerge from a careful reflection and consideration of alternative versions. Furthermore, a guide serves as a reminder of the core aspects of the research questions to be asked (Darlington & Scott, 2002).

The interview schedule contained a relatively small number of open-ended questions that were developed using the nine primary factors that contribute to opportunity recognition and innovation. This is provided in Appendix 1.

Data analysis and interpretation

There are numerous ways in which qualitative data may be analysed (Darlington & Scott, 2002). Qualitative research, which is associated mainly with interpretivism, requires the researcher to explore and understand the social world through the research participants and their own perspectives (Ritchie et al., 2013). This approach is suitable for this research because, as emphasised by Carcary (2011), it offers an opportunity to capture the innovators' / entrepreneurs' "contextual depth and detailed, nuanced descriptions" of their own experience of the innovation process.

Thematic analysis of the textual data from the transcribed recordings was conducted using Ritchie and Spencer's (2003) refined framework method. This framework is useful because it involves distinct but highly interconnected stages of data analysis. The approach involves a systematic process of sifting, charting, and sorting materials according to key issues and themes related to the research topic. The framework has the following five steps:

(a) Familiarisation: This stage involved immersion in the data and becoming familiar with the range, richness and depth of the data. Tasks such as listening to the recordings, reading transcripts, listing key ideas and recurrent themes were undertaken.

(b) Identifying a thematic framework: This stage involved the identification of key issues, concepts and themes according to which the data could be examined and referenced, thus setting up the thematic framework within which the material was sifted and sorted.

(c) Indexing: This stage refers to the process whereby the thematic framework is systematically applied to the data in its textual form as generated from the transcriptions of the individual interviews.

(d) Charting: Once the thematic framework had been applied to each transcript, this stage involved lifting the data from their original context and rearranging it according to the appropriate thematic reference. It also included building up a picture of the data as a whole by considering the range of experiences for each issue or theme.

(e) Mapping and interpretation: This stage involved putting together key

characteristics of the data, mapping and interpreting the dataset as a whole.

Delimitations of the study

Delimitations refer to characteristics of the study that limit the scope and define the boundaries of the study (Simon, 2011). Listed below are some of the delimitations of this study:

- The research explored the usage of the different factors that contribute to opportunity recognition and innovation by entrepreneurs from an innovation management perspective.
- The research targeted people who have businesses that have been in existence for more than three years and owned more than two businesses. The aim was to focus on serial entrepreneurs.
- The research targeted entrepreneurs from various industries, including those with or without any affiliation to innovation hubs.

Assumptions

The research solicited personal views, opinions, and experiences in relation to the factors that contribute to opportunity recognition and innovation using in-depth interviews. The assumptions on which this research was based are as follows:

- The entrepreneurs had an adequate understanding of innovation.
- The entrepreneurs were aware of and had an adequate understanding of the different factors that contribute to opportunity recognition and innovation that were being researched.
- The entrepreneurs would be forthcoming and honest about their personal experiences with innovation and were willing to share their opinions.
- The interview procedure and data gathering process would ensure the respondent's right to privacy is secured.

Validity

Validity in research refers to the extent to which a data collection tool measures what the researcher wishes to measure. Sapsford and Jupp (1996, as cited in Bell, 2005), refer to validity as the extent to which the design of the research provides credible conclusions. Validity was achieved through the careful wording of the questions in the interview guide. Other techniques that were employed, in reference to Willing's (2008) stipulation, were continuously checking, questioning, and theoretically interpreting the findings throughout the research process.

Reliability

Reliability, as outlined by Bell (2005), "is the extent to which a test or procedure produces similar results under constant conditions on all occasions". Reliability was ensured by piloting the interview guide and ensuring that questions were worded in a manner that elicited the same responses under different conditions and enlisted the required information.

Results and Discussion

The research problem that the research sought to address concerns the factors that contribute to opportunity recognition and innovation. This involved the establishment of some of the factors that contribute to opportunity recognition and innovation among South African entrepreneurs and innovators. The research also involved determining how these factors actually affect opportunity recognition and innovation, as well as evaluating some of the positive aspects and the negative aspects of each factor.

A total of eleven (11) interviews were conducted with entrepreneurs and innovators. The table below depicts the profile of the respondents that emerged from the analysis. The respondents' profile was based on the depth of discussion and / or knowledge on a particular contributing factor, and the number of times that an antecedent was referenced.

Table 1: Respondent's Profile

Respondent Number	Contributing factor to opportunity recognition and innovation
1	Adoption
2	Goals, interests
3	Adoption, networking
4	Problems, adoption, networking
5	Artistic creativity, imagination, problems, goals, technology, adoption, networking
6	Artistic creativity, problems, goals, synthesis, first-person experiences
7	Problems, goals
8	Artistic creativity, interests
9	Problems, goals
10	Problems, technology
11	Artistic creativity, problems, first-person experiences

As shown in the graph below, most of the respondents (6 out of 11) emphasised the desire to solve problems as a key factor in the recognition of opportunities. Of equal importance to innovation were goals and aspirations, an area which saw 5 of the 11 respondents attesting to its key role in the recognition of opportunities. Four of the respondents put emphasis on artistic creativity and adoption as antecedents of innovation.

Networking, though not commonly seen as a key factor by some respondents in the identification of opportunities, was seen as an important precursor for innovation by 3 of the respondents. Interests, technology and first-person experiences (2 out of 11 each) and to a lesser extent, synthesis (1 out of 11), also aid in opportunity recognition and innovation.

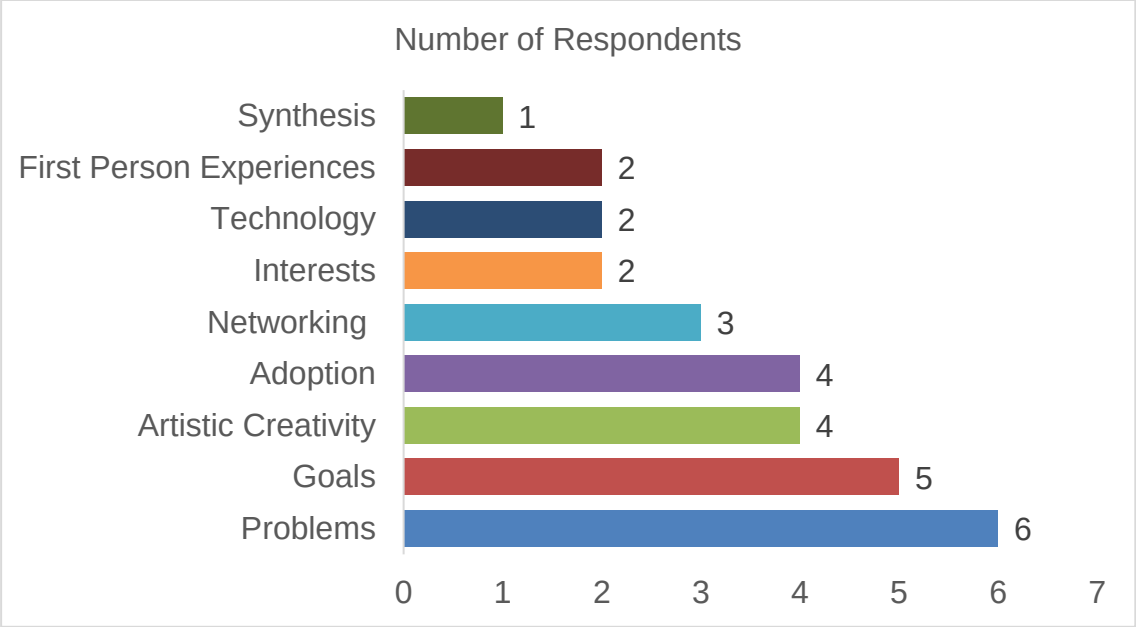

Figure 1: Number of Respondents Emphasizing a Contributing Factor

The detailed findings from this research are presented below. The factors are listed in order of the perceived importance in their contribution to opportunity recognition and innovation. The factor that most of the respondents saw as being critical (problem-solving) to opportunity recognition and innovation is outlined first. The factor that was deemed least critical (synthesis) is outlined last.

Solving problems - a desire to solve a problem, or to bring improvement or change

Solving problems or a desire to bring improvement or change can help with innovation. Being pressured by – being under pressure due to - a problem can inspire creativity. Discomfort and chaos can also create opportunities to think of ideas. Unhappiness about the status quo may aid with the recognition of opportunities. Desperation and hardships also drive innovation. It is taken that problems are generally accompanied by markets.

Some respondents insist on rather seeing problems as opportunities. The perspective that one decides to take on an issue or aspect is important. This can be positive or negative and will impact on whether an individual sees an opportunity. Some may view

the same problem to be without opportunity, while others see it as laden with potential. The innovator should maintain the right mindset. It is crucial to ask the right questions, to understand exactly what the problem is. The innovator may merely need to find a different solution based on a different perspective. Exposure to different cultures and contexts may help with this.

Complex problems or shunned problems, like poverty, for example, may potentially provide vast opportunities for innovation. There may be a lot of opportunities in markets and areas generally overlooked by conventional business and players, for example, under-resourced areas and poor neighbourhoods. Conventional wisdom would proclaim that these markets and areas do not contain a lot of opportunities.

Problems are very contextual. Simulating the problem may significantly contribute to solutions. Failure to conduct in-depth analysis may lead to a focus on the symptoms, rather than the cause of the problem. Proper research should be done to establish to what extent the problem has been interrogated before, what the results were, and what the current knowledge or thinking on the problem is. Certain problems may not have a simple solution. Furthermore, working on problems must be justifiable from a business perspective. People should not only focus on the problem that they want to resolve, but also consider the business implications – for example, the innovation's relevance to the market as well as the size of the market. Outlets like newspapers may report problems that are every day and thus very practical.

Goals, aspirations or values

Dreaming and aspirations can stimulate ideas. Problems people face may also lead them to start dreaming or to aspire. Values are seen to mostly contribute to opportunities that are sustainable. Values may thus indirectly result in dreams, visions or goals. One view is that the best kind of innovation occurs when there is a long-term perspective.

Goals may simply be tied to fads or trends – the objective would be to put down more sustainable goals. Goals may be set too ordinary. While the vision and goal need to

be attainable, it is important to aim higher. Some feel goals should be unattainable because they motivate and inspire. Thus, the more unrealistic a goal, the more it pulls the person up to higher levels. The general view is that more extraordinary and daring or challenging dreams and goals contribute more to innovation. On the other hand, a goal may simply be to do better than the status quo.

The person should also consider “silly”, “insane” or “crazy”, “childish” or “innocent” dreams and goals. The practical or possible should temporarily be discarded, conventional logic should be relaxed, and the impossible should not be excluded, when dreaming or setting goals. To devise goals, the mind should be emptied first. Goals require freedom to innovate – taking responsibility and allowing taking risks. Devising goals also require a proper understanding of the underlying, relevant concepts. Goals should be confirmed against the market.

The fact that goals are not always tangible, but abstract, may complicate buy-in and realisation. It is not always easy to picture goals, and using goals may imply techniques or methods that not everyone may be comfortable with. Goals and visions may not initially enjoy the support and may be necessary to build support first. Proper articulation of goals is crucial.

Taking the necessary steps to materialise dreams and goals is seen as important. A lot of perseverance is required to see dreams and goals through, and practical, incremental steps should be taken towards the dream or goal. The goal should constantly to work towards a practical solution. In this regard, retrospection helps the process.

Arrogance and a lack of knowledge may hinder the realisation of dreams or goals. Given the inherent timelines that accompany goals, revisiting the goals on a time basis is important, to ensure that the innovation is consistent and realistic in alignment with where things currently stand in the environment and still relevant and innovative.

Artistic ways, such as creative inspiration, imagination, or objective fantasy

Most of the respondents agreed that artistic means could be used to innovate. They also shared the sentiment that creativity as artistical ways and imagination plays a critical role in innovation and the generation of ideas. For one respondent, artistic ways are integral to innovation. Artistic creativity and imagination were also seen as offering the opportunity to differentiate and stand out.

Artistic creativity and imagination can also be applied in the use of current innovation in different ways. It may not be necessary to try to find something that is absolutely new, and the best way to apply artistic creativity is to simply use existing solutions to current problems that have already been identified.

> *"...to come up with solutions for current problems because there are a lot of problems around us these days, and everybody is focusing on the new big thing that they can come up with, and they are omitting all the opportunities of all the solutions they can find for problems right in front of them and everybody else*" (Respondent 5).

Imagination is also seen as one of the big drivers when it comes to innovation. This view is supported by Kerr and Lloyd (2008) who argued that creativity is concerned with imagination, insight and improvisation, among other things. One respondent (Respondent 5) went as far as to say that people need to start using their imagination to a point where most people start thinking that they might be a bit childish and that the ideas they were considering won't work.

> *"I think to become more innovative people need to actually … become like children, playing games like children used to play… If you look at children, they don't really have any inhibitions and as we grow up we create more and more inhibitions around the fact that what will society say of me if I say this or if I do that. So, we need to move away from that, also we need to be open to learn"* (Respondent 5).

A dominant view is that with creativity, people need to completely step out of the norm of what they are used to doing, for them to become innovative. A lot of people are willing to operate - innovate and be creative - within the confines of their comfort zones but are hardly willing to step outside of their comfort zones. Equally, stepping out of norms is crucial. In addition to the desire to step out, people need to have a better understanding of what it really means to step out of their comfort zones and norms. In some instances, this means not thinking and behaving according to the way one has been conditioned. In the business world, there may be the expectation to use (certain) business language and to behave in certain ways, and this may stifle innovation. People need to change their view of what is acceptable and aim to step out of their comfort zones and norms.

The innovator should play a lot, venture where he has not ventured before, and think on what he has not thought of before. The innovator needs to completely step out of what it is that he used to do or what he is used to doing. He should break with routines, and sustain the right attitude - remain positive. The Continual and regular practice of creativity is seen as crucial. This involves looking for new problems to work on, and looking for new tools or approaches to work with. Also, it is important to ask the right questions.

Having a lot of references or examples greatly helps. Having different (global) references, while taking into account local cultural parameters, and being cognisant of the conditions in the market that is being focused on, is seen as key. Also, it pays to understand why something did or did not work in the referenced context. External references and learning from external resources can accelerate innovation. Similarly, switching perspective by adopting someone else's perspective, or a renowned perspective – in essence, using perspective templates - and doing so sequentially may also yield significant gains. The role of perspective was also highlighted by McFadzean (1998b) in his assertion that creativity can be enhanced by looking at a problem from a different perspective.

Getting a minimum viable product off the ground that the market can evaluate is seen as important. Requiring proper/ further research, the right contacts, and the right

relationships, as well as difficulty or inertia to get out of comfort zones, may hinder the innovation effort.

Fear - of judgement, rejection, backlash, failure, the unknown or being uncomfortable - is also another dominant restraining factor. This limits the generation of ideas because a platform is not created where these “silly ideas” or “ideas that don’t make sense” can be interrogated further. Thus, failure to step out of the comfortable zone, to move away from what is familiar and explore unfamiliar areas, can limit the generation of ideas. Failure itself can move the person forward – failure leads to learning and discoveries. Articulation and communication of creative intent are also important.

Adoption – generally, borrowing from other contexts

The view is that industries frequently complement each other, by borrowing from each other. Adoption can lead to the identification of a solution that other people in the same industry are not looking for, and it will be unique. Adoption may accelerate innovation, in that it avails timely solutions. One benefit of using this approach is that people can benefit from the lessons learnt by the teams that have already made the innovation that is being adopted. This shortens the learning curve, which means that the person who uses this approach can move forward much quicker without having to repeat the whole process followed by the predecessors.

It is important to identify which problems have already been addressed in other contexts so that it can be used as a base to determine the remaining gaps in the solution, that should be targeted by innovation. It is important to understand the context of the innovation – the context a solution is adopted to.

> *“It’s always good to understand the context or the market, what solutions have been addressed or what problems have been addressed in other countries, how the solutions worked, and it’s sometimes the best idea not to re-invent the wheel, but to work with an existing partner that did it overseas and then work with them to innovate in a specific market. So that could be a good strategy*” (Respondent 1).

Being open in thinking and to the possibility, thinking holistically, and paying attention to context are seen as the crucial factors. Preconception hinders exploiting adoption. Being comfortable to move away from a focus on an industry that someone is familiar with and how things are done in that industry, as well as looking at completely disconnected industries, can aid in the identification of ideas and innovative solutions. The entails not looking at what other people in your industry or space are doing to find a solution. The solution that is being sought could be found in a different industry.

One view also is that, even if the adoption does not directly lead to opportunities or solutions, it can do so indirectly. By merely looking at other possible solutions and solutions to other problems can inspire the innovator. Because it entails ideas and solutions that already work, and because a number of these ideas or solutions are browsed and perused, it may lead to the discovery of a better solution for a problem that the person is trying to solve.

> “So, the benefits, if you look at a completely different industry to try and adopt an idea, you might find a solution for a problem that you weren’t looking for that might even be a better or bigger benefit to you than what you were originally looking at.” (Respondent 5).

The target may very well be a product that has existed for a very long time, and that most people thus believe cannot be innovated anymore, and the source may be from a seemingly completely unrelated field – seemingly not directly related to the product or problem at hand. Adoption may be about a solution's principle, rather than the solution itself. The reference may also be other things, like nature or natural phenomena.

> *"Someone that I think is really innovate as well is $1 shave club. So basically, all $1 shave club does is they sell you razor blades to shave with. They were bought by Gillett for 2 billion dollars. So how can a company selling razor blades that’s been around for I don’t know 20, 30, 50 or whatever years, all of a sudden come through and within 3 years or 5 years or however long they existed, but it was a short period of time, now all of a sudden just come and build a billion-*

> *dollar company using a product that's been in existence for years and years and years. So, that's not a new product, they just found a creative way to sell that particular product, but it was very innovate the way that they did it. So, you can't say that it's not innovative because they haven't designed a product, the way the company was structured was innovative."* (Respondent 2)

Simply copying others, but doing so in an innovative way, may also be seen as innovation. Innovation does not necessarily imply that you have to be number one. The frame of reference is seen as important.

> *"So, you didn't have to invent the cell phone, but Samsung copied, Blackberry copied, Apple copied, everybody copied Nokia."* (Respondent 3)

A benefit of adoption is that the innovator starts with something that already works. Communication across borders, like industry borders, breaks down boundaries, and thus accelerates the process. It is necessary that the innovator leaves his regular environments and common routines.

A potential disadvantage may be that it may take a significant amount of search, and thus time, to discover new solutions. Discovering a solution also is not guaranteed. The context from which an idea is being adopted forms a frame of reference, and it is important to understand what the benefits of the concept you are trying to adopt are, as well as understanding how it operates before it can be adopted and adapted in a different context.

Another challenge is the failure to adapt what is being borrowed from another context into the new environment. Overall, the entire process entails more than just adopting the basic principles. Thus, the risk is that, without adequate adaptation, the solution may not work as well as expected in the new environment.

> *"One of the difficulties of doing this is that you don't adapt. You know it's far more than adoption. You adopt the basic principle and then you have to adapt it for the new environment that you're bringing it into. So, for example, I've*

adopted manufacturing factory techniques in an intensive care unit, but I've obviously had to adapt them for that new environment. So now I think people sometimes forget to adapt" (Respondent 4).

Negotiation and networking

Some respondents see networking as the most important tool of life, and the most valuable tool of innovation. Networking can multiply the innovation effort, particularly if certain levels of trust and companionship have been reached and established. A group may innovate more effectively than an individual, and a group that connect well with each other may innovate even more effectively.

"That's the most important thing that you have of in all of the tools you have in life. Being able to connect with people is the most valuable tool to have innovation. Remember for one person to be innovative is ok. If you put 3 or 4 people in a room and you say to them, just you now start creating, it will also be good. But if you can get those 3 or 4 people in the room to first connect with each other, to actually start trusting each other, to feel comfortable and to know that there's no judgement in that room, you will find that creativity explodes because then they don't mind if they say something stupid or say something crazy" (Respondent 5).

Trust, coupled with freedom of expression, are seen as important contributors to the success of networking. Networking, which is based on trust for one another, paves the way for innovation because people can open up and share any idea that they have without fear that they may say something that is deemed silly. People are less inhibited from saying what they want to say. Networking is seen as not simply connecting with people. Rather, it involves understanding who the people are you are meeting with, what their backgrounds are, as well as whether you can relate to them by values. Networking is based on quality and authentic relationships, like-mindedness, resource sharing, and sharing of values, and seeks mutual benefit and support.

Networking can enable people to become successful. Networks can introduce

someone to resources otherwise unavailable and can shape his mindset. Being put in contact with people who have experience - in a particular industry, for instance - as well as being mentored, can accelerate the innovator and innovation process. Increasing the number of people working on a problem may increase perspective, and thus the number of and time to solutions – simply put, two heads are better than one. Also, people can use networks to learn and gain knowledge, discover new opportunities, and benefit from more successful and experienced people.

Networks may very well suggest opportunities. Conversations can lead to a lot of innovative ideas. Through networking people may discuss problems or ideas that they find interesting, without necessarily thinking of them as opportunities; conversely, the innovator finds it very opportune. Also, others may suggest solutions and ideas to the innovator while discussing his problems, without even realising it.

Still, the efficiency and quality of the network should be managed. And there must still be problem-solving and creativity skills embedded in the network. The issue with networking or negotiation is that, even though he may do so once or twice, the innovator cannot constantly rely on the outside for opportunities. The innovator will have to develop innovative competencies internally at some point.

Networking demands relationship building – investing in relationships eventually boosts innovation. It may take time to build networks based on trust. Networking also requires humility – the innovator must be teachable or coachable, and an apt listener. The innovator must still evaluate the views and opinions of others and must have the ability to do so. It is vital to connect with the right people – people that will actually contribute to the innovator's experience. The number of connections the innovator has is not necessarily the most important factor. Talkers are distinguished from doers. Networks can be draining as well.

The innovator may find that the type of network he requires is non-existent, and may need to build his own network – evangelise – first. He may have to first raise awareness and get the commitment.

Interests, inquisitive journeys or passions

Interests enable people to focus on their strengths and they will be more successful if they have an interest, or are inquisitive and passionate about something. Focusing on something of interest helps with motivation. This view is supported by Grant and Berry's (2011) view, for instance, that, when people are intrinsically motivated, their desires to learn and to explore their interest will lead them to focus on novel ideas. Hobbies are also seen as paths to innovation. Some respondents encourage people to have as many hobbies or try as many experiences as possible because it is known to lead to creativity and innovation.

An inquiring mind is equally seen as critical to the generation of ideas. Having an inquiring mind may also mean to have a mind that is looking for opportunity all the time. Sometimes an inquiring mind entails collecting information, without having a real sense of how it can be used, but over time that piece of information can trigger a eureka moment as things fall into place, and that information suddenly becomes invaluable.

Passion is cited as one of the main factors that can drive innovation because it is driven by inner energy which propels people to fulfil their goals or aspirations. Necessity may also drive motivation, and can thus stimulate business ideas. Passionate people are seen as doers and implementers. With innovation, the outcome is determined by the amount of energy you put, and passion contributes to this.

At the same time, passion is critiqued in that passion may not be accompanied by (business) intelligence and common sense. Being driven by passion alone can be dangerous and may lead nowhere. Being overly passionate about something may also cause the person to become ignorant. The big picture should constantly be kept in mind.

First person experiences

First person experiences were seen as an important aid in identifying ideas. Some respondents saw their first-person experiences as "brilliant for defining solutions". One

respondent established the first business through first-person experiences. Life experiences, like upbringing, circumstances faced, or events may also contribute to ideas.

First person experiences may point to experiences shared by others, and this can point to viable opportunities. Having experienced, and experiencing something first hand may give the innovator an edge during the innovation and marketing process. The offering may be seen as more authentic and genuine, and the innovator may constitute proof of concept. It becomes easier for the innovator to identify with people experiencing a similar problem, and in turn, customers may more easily identify with the person. Very personal experiences may also be strong sources of motivation and drive to innovate. Negative first-person experiences may lead to necessity, and often motivate people to do something about their situation, thus leading to innovation.

> *"… her daughter had cerebral palsy and out of that, she's established the most amazing business, designing, and distributing wheelchairs. A whole industry around mobility, you know. So, there's no doubt that you know if you'd have said to [Person name] 5 years before her daughter was born with cerebral palsy and therefore would need a wheelchair that she was going to be in that business, she would've said no… So, it's very much a first-person experience; necessity is the mother of invention"* (Respondent 4).

"Global" experiences – experiences at higher levels, like the corporate or macro-level, likely shared by a number of people, may also contribute to innovation. This points to the spirit or ethos of a group or society at a particular point in time. The example of war and innovation that usually stems out of war was raised. Competition – competing with others - may also constitute and become a first-person experience that fuels innovation.

First person experiences may be unique and opportune. First person experiences are more powerful when accompanied by learning. Difficult, painful or intense experiences can significantly aid learning. Personal experience can also contain perception and learning otherwise not possible. First person experiences may lead to personal or tacit

understanding of a situation or phenomenon. The knowledge and level of understanding that comes with personal experience cannot be transferred to other people even if it's written down but provides the best lesson for the person who is affected. The more one focuses on experiences; the closer one gets to phenomena. Personal interpretation of phenomena is seen as important. Diverse sources of experiences and going out of your way to having experiences can aid first-person experiences. Window shopping is also seen as a way to increase experiences.

On the other hand, the personal experience may not be a sufficiently shared experience, such that it may be marketed. Even when the experience launches the person into action, the person may fail to truly innovate, if he simply reverts to current solutions. Similar to passion, and the drawbacks of passion, the person may become too engrossed in his own experience. The experience may cloud judgement. Again, business intelligence and acumen are crucial. It is still necessary to be open and be willing to look at other views and opinions.

Scientific or technical inquiry or development

The view is that technology in itself allows innovative solutions. It may not be necessary to develop (radically) new technology per se. Technology can be borrowed and studied to repackage it and apply it in new ways to existing problems.

Innovation can have a multiplicative effect – in general, innovation may lead to more innovation. The technology embedded in new innovation and communities can stimulate new ideas. Studying what other people have already done or attempted can accelerate the process, and may also be a source of ideas. It is also possible to consider, implement and learn from technology used by other industries. Studying how people are using technology is very rewarding.

Science and technology-based innovation require new science and technology to build on. Science and technology-based innovation also require a base of scientists, technical workers and engineers, etc., who have the required knowledge to innovate in this way. Subject knowledge or technical knowledge is required to innovate in

individual fields. Science and technology increase the ceiling of what can be achieved through innovation. Science and technology avail expertise that the innovator can draw from.

Looking to technology leaders, coaching and mentoring further develops process, skills and capability specific to technology innovation. Access to technology super-specialists is a significant bonus – it may accelerate further learning and innovation. Being coached by those who are already successful, and working with people who are smarter than you, are important factors, as it opens up unique perspective.

Both a narrow focus and a too broad focus may hinder technology-based innovation. It may quickly become unfocused, given all the knowledge available. At the same time, only narrowly focusing on and following technology may deliver insignificant results. A related challenge is getting stuck in the process of research and analysis (analysis paralysis), to the extent that the person fails to take the next step and produce something. It is easy to think too technically.

Science and technology must still be reworked into products. To overcome this, the aim should be to develop a minimal viable product (MVP) as soon as possible, so that customers can test the product and provide feedback that can be used to design further and develop the product. Involving the customer as early as possible, and developing solutions with the customer helps. Creativity may equally be realised on the customer-side, by incorporating customers and their feedback.

Synthesis and induction

Because synthesis brings concepts, ideas, processes or products together, it may result in coming up with new solutions relatively quickly. A benefit of synthesis is that the innovator can quickly learn from others. Synthesis may result in completely different products. Synthesizing existing products may form richer composite products. Synthesis can also be used to revive obsolete products. For instance, the components of a product can be re-configured, to form an altogether new product.

Synthesis is also a welcome solution when faced with abrupt changes in a product or industry. Synthesis can also be used to create new concepts and knowledge, that in turn can be used to innovate from. When done right, synthesis should lead to the sum being greater than the parts.

It is also seen that synthesis requires taking a step back and looking at a product or concept, for instance, not just for what it is, but what else it can be paired with to develop something novel. That is, delineating a product's fundamental properties, and finding other products that it can be combined with.

> *"A lot of people will say "well what can you do with a phone? Well, it's only a phone." And if you look at it as it's only a phone, then you're not going to find innovation. But if you look at it as an electronic device that you carry around and you say well what other electronic devices do we have? … well, I've got a voice recorder, I've got a phone, I've got a camera, I've got a video recorder, I've got a TV remote and you start looking at all the different electronic things and you say well "how now can you make that all one"?* (Respondent 5)

A simple method is to simply try to combine different things and see if they will fit together. Another technique is to seek, note and cross-reference best cases, to apply them to the current situation. This involves finding out how the concept was applied initially, how the concept was received by the market, as well as how well it performed. Also, focusing on weaknesses in a concept, idea, process or product, and looking to synthesis to negate these weaknesses, or even turn them into new strengths, can lead to new innovative solutions. Market intelligence and acumen may also guide the synthesis process – serve as a source of suggestions as to what can be successfully combined. It is crucial to consider the customers' perspective.

Synthesis increases the complexity of the new product. The loss of simplicity may impact on the resources, time, focus and costs associated with getting the product to market. There is also the danger of over-synthesising the features so that the product becomes too complicated for the user. It is possible to lose sight of the market.

Attempts may also be made to combine things that generally cannot be combined – not everything can be combined. Synthesis may lead to the creation of inefficient products or processes, and there may be a trade-off between specialisation and cost. Synthesis may also hinder a specialisation focus. Proper integration and adoption are required to ensure the solution is scalable. Attention should be paid to the market and local market characteristics. For example, the combination of green chilli (sushi paste) and ice cream works very well, but mostly in Japan.

> *"This was a more regional thing, in Japan ice cream, with you know that green chilli that you use on sushi, what's it called?... So, there they combined it… Yeah, it's disgusting but it works regionally. So, you took something from sushi and ice-cream and you put them together. It works."* (Respondent 3)

Conclusion

The desire to solve problems was seen as a leading factor in the generation of ideas and recognition of opportunities by most of the respondents. Goals and aspirations also play a key role in opportunity recognition and innovation. Problems can form the base for goals and aspirations for a solution or improvement to situations. Emphasis was also placed on artistic creativity and adoption as antecedents of idea generation and innovation. Other contributing factors, such as networking, interests, technology, first-person experiences and synthesis all play a role in opportunity recognition and innovation.

Each of the antecedents potentially offers and allow expert areas of innovation. The innovator may become very experienced in a particular antecedent as an area of innovation. The innovator may continually gravitate towards or focus on 1) artistic creativity, 2) seeking new interests, 3) known problems, 4) goals, 5) science or technology, 6) adoption, 7) synthesis, 8) personal experiences, or 9) networking, to identify opportunities, and to innovate. Being more experienced in a particular antecedent should suggest that the innovator can exploit the antecedent more than other innovators.

A number of the antecedents may offer unique solutions and benefits. A number of them are noted to accelerate innovation. In certain contexts, one antecedent may be more applicable or beneficial than another. However, none of the antecedents is sufficient for innovation – none of the antecedents by themselves can necessarily ensure innovation. Each of the antecedents has caveats that restrain their ability to impact innovation. For instance, passion is important for innovation, but blind passion may equally be dangerous.

Themes such as business intelligence and acumen, as well as “silly ideas”, “crazy ideas”, “thinking, behaving or playing like a child”, and the mention of comfort zones and norms, are common to the antecedents, and suggest that there may be a number of principal factors underlying the antecedents studied. Underlying all the antecedents may be the need to cross boundaries of the acceptable, or rather boundaries of the possible.

A relationship should exist between what is seen as acceptable (the acceptable), and what is seen as possible (the possible). In many ways, crossing the line of what is seen as possible constitutes crossing the line of what is seen as acceptable, and this is both the obstacle and objective of the innovator. Hence, innovation can equally be defined as crossing the boundaries of what is possible, while still yielding outcomes that are desirable. Boundaries of the possible – what defines, determines, and constraints what is possible - may not be obvious, and may require a combination of a unique perspective, scholastic enquiry, and empirical experience. This is also something that deserves further investigation.

The primary factors expected to underlie the antecedents are 1) perspective, 2) knowledge, and 3) first-person experience (sensing, interpreting). Perspective helps to change the worldview, to permit a new frame of reference. Still, knowledge in the form of axioms, laws and methods are necessary. Even if the perspective is changed, and even if a change in perspective can realise innovation, it is accomplished through knowledge – knowledge remains a medium.

Furthermore, the innovator may only be able to really grasp the phenomenon he

wishes to innovate, after personally experiencing it and interacting with it – at this point additional knowledge is created and added. There may be certain forms of knowledge vital for innovation that is only obtainable through first-person experiences.

Not all respondents really actively differentiate between the factors. Only when discussing them do they note the differences. There may be a link between the expertise of the innovator, and the number of antecedents considered by the innovator. It seems that more experienced entrepreneurs generally span the antecedents more. There may be a correlation between ease of use of antecedents or antecedent experience and actual entrepreneurial experience.

Also, diversity in the entrepreneur's scope may play a role. Some entrepreneurs are particularly focused on specific markets. At the same time, the nature of innovation is not expected to be dependent on the market segment. Antecedents considered by innovators may shape and define the type and nature of innovation taking place in a sovereign.

Business and managerial implications

The competitive nature of most industries entails that those who have a unique competitive advantage and have the ability to innovate in order to meet their market and customer demands or expectations will have a higher survival rate. The research outcomes from this study offers important insights for business, managers and researchers in the field of entrepreneurship and innovation.

The research sought to bring together some of the different factors that business, managers and entrepreneurs, including potential entrepreneurs and innovators, can consider in their effort to come up with ideas for their businesses or for the purpose of driving innovation. Innovation within a business or corporate organisation can positively impact on an entity’s survival or growth in a competitive and dynamic marketplace. Business and innovation managers can drive innovation within their organisation by espousing one or more of these factors that contribute to entrepreneurship and innovation. An understanding of the different factors that can be

used to identify ideas and opportunities can enhance innovation.

Limitations of the study

The main limitation of this research is that the results may not be generalisable to the rest of the innovators and entrepreneurs. This is due to the limited sample size and use of non-probability sampling procedures (Darlington & Scott, 2002). The research sought to obtain greater depth of understanding from a small number of participants; a total of 11.

In addition to the above, based on the research methodology adopted, the researcher was inextricably immersed in the research, which, according to Willig (2008), makes it difficult to avoid the imposition of meaning, and thus alternative interpretations of the data are always possible. Darling & Scott (2002, p. 17) also highlight another limitation of a qualitative study such as this one, and outline that because of the role of the researcher in terms of positioning, based on their own ideological commitments or lens they bring to the process, “there is a risk that they may avoid finding what they do not want or do not expect to find”.

Recommendations

Future research can examine whether such antecedent-based innovation specialisation exists, the extent by which innovators specialise in their innovation skills, and the extent by which innovators stick to their type, style, or specialisation of innovation.

Furthermore, future research might examine which antecedents complement each other very well to drive the identification of opportunities and innovation. Another research path may explore the extent to which the applicability of these antecedents varies across industries or along the innovation continuum.

The relevance and applicability of these antecedents to incremental versus radical

innovation, or product-based versus process-based innovation, as well as business model innovation, could also be investigated.

In addition, future research can look at formal definitions of the antecedents, as well as how parsimonious the antecedents are. A quantitative research methodology that includes factor analysis on the antecedents can be conducted.

Appendix 1: In-depth interview guide

Entrepreneurship and innovation: factors that contribute to opportunity recognition, idea generation and innovation among entrepreneurs and innovators in South Africa

In-Depth Interview Guide – (LOI: 45 minutes)

1. Artistic ways, such as creative inspiration, imagination, or objective fantasy
    - Do you think artistic ways, such as creative inspiration, imagination, or objective fantasy, can contribute to opportunity recognition and innovation? Why do you say so?
    - How does creative inspiration, imagination, or objective fantasy, contribute to opportunity recognition and innovation?
    - What are some of the positive aspects of using creative inspiration, imagination, or objective fantasy for opportunity recognition and innovation?
    - What are some of the negative aspects of using creative inspiration, imagination, or objective fantasy for opportunity recognition and innovation?
2. Interests, inquisitive journeys or passions
    - Do you think interests, inquisitive journeys or passions – a desire to understand something or the fact that you are passionate about something - can contribute to opportunity recognition and innovation? Why do you say so?
    - How do interests, inquisitive journeys or passions, contribute to opportunity recognition and innovation?
    - What are some of the positive aspects of using interests, inquisitive journeys or passions for opportunity recognition and innovation?
    - What are some of the negative aspects of using interests, inquisitive journeys or passions for opportunity recognition and innovation?
3. Solving problems - a desire to solve a problem, or to bring improvement or change
    - Do you think solving problems – a desire to solve a problem, or to bring improvement or change - can contribute to opportunity recognition and innovation? Why do you say so?
    - How does the desire to solve a problem, or to bring improvement or change, contribute to opportunity recognition and innovation?

- What are some of the positive aspects of using a desire to solve a problem, or to bring improvement or change for opportunity recognition and innovation?
- What are some of the negative aspects of using a desire to solve a problem, or to bring improvement or change for opportunity recognition and innovation?

4. Goals, aspirations or values

- Do you think goals, aspirations or values can contribute to opportunity recognition and innovation? Why do you say so?
- How do goals, aspirations or values contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using goals, aspirations or values for opportunity recognition and innovation?
- What are some of the negative aspects of using goals, aspirations or values for opportunity recognition and innovation?

5. Scientific or technical inquiry or development

- Do you think scientific or technical inquiry or development can contribute to opportunity recognition and innovation? Why do you say so?
- How does scientific or technical inquiry or development contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using scientific or technical inquiry or development for opportunity recognition and innovation?
- What are some of the negative aspects of using scientific or technical inquiry or development for opportunity recognition and innovation?

6. Adoption – generally, borrowing from other contexts

- Do you think adoption – generally, borrowing from other contexts - can contribute to opportunity recognition and innovation? Why do you say so?
- How does adoption or borrowing from other contexts contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using adoption or borrowing from other contexts for opportunity recognition and innovation?
- What are some of the negative aspects of using adoption or borrowing from other contexts for opportunity recognition and innovation?

7. Synthesis and induction

- Do you think synthesis and induction can contribute to opportunity recognition and innovation? Why do you say so?
- How does synthesis and induction contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using synthesis and induction for opportunity recognition and innovation?
- What are some of the negative aspects of using synthesis and induction for opportunity recognition and innovation?

8. First person experiences

- Do you think first person experiences can contribute to opportunity recognition and innovation? Why do you say so?
- How do first person experiences contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using first person experiences for opportunity recognition and innovation?
- What are some of the negative aspects of using first person experiences for opportunity recognition and innovation?

9. Negotiation and networking

- Do you think negotiation and networking can contribute to opportunity recognition and innovation? Why do you say so?
- How do negotiation and networking contribute to opportunity recognition and innovation?
- What are some of the positive aspects of using negotiation and networking for opportunity recognition and innovation?
- What are some of the negative aspects of using negotiation and networking for opportunity recognition and innovation?

References

Anthony, S. (2016, July 15). Kodak's Downfall Wasn't About Technology. *Harvard Business Review*. Retrieved October 10, 2017, from https://hbr.org/2016/07/kodaks-downfall-wasnt-about-technology

Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing, 18 (1)*, 105-123.

Baron, R. A. (2007). Behavioral and cognitive factors in entrepreneurship: Entrepreneurs as the active element in new venture creation. *Strategic Entrepreneurship Journal, 1*(1-2), 167-182.

Bell, J. (2005). *Doing your research project: A guide for first-time researchers in education, health and social sciences* (Vol. 4th ed.). Open University Press.

Blaxter, L., Hughes, C., & Tight, M. (2006). *How to Research* (Vol. 3rd ed.). Berkshire: Open University Press.

Carcary, M. (2011). "Evidence Analysis using CAQDAS: Insights from a Qualitative Researcher". *The Electronic Journal, 9*(1), 10-24. Retrieved from www.ejbrm.com

Chrisafis, A., & Vaughan, A. (2017, July 6). *France to ban sales of petrol and diesel cars by 2040.* The Guardian. Retrieved October 10, 20117, from https://www.theguardian.com/business/2017/jul/06/france-ban-petrol-diesel-cars-2040-emmanuel-macron-volvo

Christensen, C. M. (1997). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Vol. 4th Edition). Thousand Oaks, California: SAGE Publications.

Darlington, Y., & Scott, D. (2002). *Qualitative Research in Practice: Stories from the Field.* Maidenhead: Open University Press (first published in 2002 by Allen & Allen, Australia.

Dessus, S. C., Goddard, J. G., & Hanusch, M. (2017). South Africa economic update: innovation for productivity and inclusiveness. *South Africa economic update*(10). Retrieved September 21, 2017, from http://documents.worldbank.org/curated/en/779551505322376708/South-Africa-economic-update-innovation-for-productivity-and-inclusiveness

DiLiello, T. C., & Houghton, J. D. (2006). Maximizing organizational leadership capacity for the future: Toward a model of self-leadership, innovation and creativity. *Journal of Managerial Psychology, 21*(4), 319-337.

Drucker, P. F. (1985). *Innovation and Entrepreneurship: Practice and Principles.* New York: Harper & Row.

Fillis, I. (2007). An examination of Celtic craft and the creative consciousness as a contribution to marketing creativity. *Journal of Strategic Marketing, 15*(1), 7-16.

Glaveanu, V., Lubart, T., Bonnardel, N., Botella, M., de Biaisi, P., Desainte-Catherine, M., . . . Storme, M. (2013). Creativity as action: Findings from five creative domains. *Frontiers in Psychology, 4*.

Grant, A. M., & Berry, J. W. (2011). The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity. *Academy of Management Journal, 54*(1), 73-96.

Herrington, M., Kew, P., & Mwanga, A. (2017). *Global Entrepreneurship Monitor: South Africa Report 2016/2016.*

Ignatius, A. (2014, December). Innovation on the Fly. *Harvard Business Review*.

Kalof, L., Dan, A., & Dietz, T. (2008). *Essentials of Social Research.* Berkshire: Open University Press.

Kerr, C., & Lloyd, C. (2008, November). Pedagogical learnings for management education: Developing creativity and innovation. *Journal of Management & Organization, 14*(5), 486-503.

Kings, S. (2017, April 7). *SA promises three million electric cars.* Retrieved October 10, 2017, from Mail & Guardian: https://mg.co.za/article/2017-04-07-00-sa-promises-three-million-electric-cars

Kuper, A., Lingard, L., & Levinson, W. (2008). Qualitative Research: Critically Appraising Qualitative Research. *British Medical Journal, 337*(7671), 687-689. Retrieved from http://www.jstor.org/stable/20510884

Lemstra, W., Hayes, V., & Groenewegen, J. (2010). *The Innovation of Wi-Fi: The Road to Global Success.* Cambridge University Press.

McFadzean, E. (1998a). The creativity continuum: Towards a classification of creative problem solving techniques. *Creativity and Innovation Management, 7*(3), 131-139.

Norman, D. A., & Verganti, R. (2014). Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change. *30*(1). doi:10.1162/DESI_a_00250

Pittaway, L., Robertson, M., Munia, K., Denyer, D., & Neely, A. (2004). Networking and innovation: a systematic review of the evidence. *International Journal of Management Reviews, 5-6*(3-4), 137-168. doi:10.1111/j.1460-8545.2004.00101.x

Ritchie, J., & Spencer, L. (2003). Qualitative Data Analysis for Applied Public Research. In A. Bryman, R. G. Burgess, & Editors (Ed.), *Analysing Qualitative Data* (pp. 173-194).

Ritchie, J., Lewis, J., Nichollos, C. M., & Ormston, R. (2013). *A Guide for Social Students and Researchers.* London: SAGE.

Sainio, L.-M., Ritala, P., & Hurmelinna-Laukkanen, P. (2012). Constituents of radical innovation—exploring the role of strategic orientations and market uncertainty. *Technovation*, 591-599.

Simon, M. K. (2011). *Dissertation and scholarly research: Recipes for success.* Seattle, WA: Dissertation Succecc, LLC. Retrieved from http://dissertationrecipes.com/wp-content/uploads/2011/04/AssumptionslimitationsdelimitationsX.pdf

Statistics South Africa. (2017, September 5). Gross Domestic Product: Second Quarter 2017. Retrieved September 21, 2017, from http://www.statssa.gov.za/publications/P0441/P04412ndQuarter2017.pdf

Sutton, R. I. (2002). *Weird Ideas that Work. 11 and a Half Ways to Promote, Manage and Sustain Innovation.* London: The Penguin Press.

Tellis, G., Prabhi, J., & Chandy, R. (2009, January). Radical Innovation Across Nations: The Preeminence of Corporate Culture. *Journal of Marketing, 73*, 3-23.

Tschang, F. T. (2003). *When does an idea become an innovation? The role of individual and group creativity in videogame design.* Singapore.

Vise, D. A. (2007). *The Google Story.* Pan Books.

Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing, 19*, 173-188.

Willig, C. (2008). *Introducing Qualitative Research in Psychology" Adventures in Theory and Method* (2nd ed.). McGraw Hill, Maidenmead.

World Bank. (2013). *World Bank Group Support for Innovation and Entrepreneurship: An Independent Evaluation.*