

**CORPORATE ENTREPRENEURSHIP STRATEGIES IN THE SOUTH AFRICAN
MINING INDUSTRY**

A research study submitted by

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DECLARATION

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

Signed at é

On the é é é é é é é é é é é .. day of é é é é é é é é é é 2013

ABSTRACT

Purpose

Volatility in the external environment increases the level of risk for organisations. Therefore organizations have to adapt to the environment by being entrepreneurial through adoption of entrepreneurship strategies. It is therefore the purpose of this study to determine the perceived value of entrepreneurial orientation and the type of corporate entrepreneurship strategies that are used in the mining industry when firms operate in volatile environments.

Data collection

For the purpose of this study online questionnaires were utilised. The questionnaires were emailed to the participants through the CEO of the company, the CEO then distributed via email to the targeted managers within the organisation. Response was minimal with only sixteen responses by mid February. The questionnaire was then sent to members of the Chamber of mines, to which there was no response. Questionnaires were then printed out and handed to respondents physically in order for them to fill out. In total 50 responses were obtained, of which three were incomplete.

Key findings

Key findings of the study are that junior mining firms are entrepreneurial and have a positive perception towards entrepreneurial orientation. Because these firms are entrepreneurial they differ from firms that are not entrepreneurially orientated by manifesting characteristics such as innovation, risk taking and proactiveness. Entrepreneurial orientation is used as a cushion against uncertainty in a volatile environment. Furthermore, entrepreneurially oriented firms also engage and utilize corporate entrepreneurship strategies such as corporate venturing and strategic entrepreneurship.

Key contribution

The study adds to a better understanding of the South African mining industry. By introducing a new perspective on how mining companies minimize risk in volatile environments as opposed to scaling down as the research conducted by Ernst & Young suggests.

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1. INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to determine the perceived value of entrepreneurial orientation and type of corporate entrepreneurship strategies that are deployed by South African mining companies in volatile environments to reduce risk and maintain a competitive advantage.

1.2 Context of the study

Many governments in countries such as Chile, Australia, Ghana, Peru, including South Africa, are looking for an increased share of the mining industry through a range of measures (PWC mining review 2012). High commodity prices have put the industry under the spotlight, and as a result governments have experienced increased pressure from local communities to increase participation in the industry in order that all citizens may benefit from the mineral wealth of the country (Ho 2010). Communities seek more than basic economic returns from mining companies; they want investments in education, infrastructure, and companies to provide job opportunities for locals (Moato 2012). This has created uncertainty in the market, uncertainty that is further exacerbated by the sovereign debt contagion which has led to investors bailing out on mining equities (PWC mining review 2012). Further challenges that cause volatility to the industry include structural changes to cost as a result of decreasing ore grade and rising operating costs, ongoing disruptions to production due to safety stoppages and industrial action, increased taxes, remoteness of certain areas, corruption, and an increase in capital expenditure to bring supply to the market (Moato July 2012; PWC mining review 2012).

Against this backdrop, Urban and Oosthuizen (2009) contend that to overcome the challenges it faces, mining as the backbone of the South African economy needs to be

more innovative by becoming more entrepreneurial in the face of the above mentioned challenges facing the industry. In addition to volatility in the external environment, the South African mining industry is characterised by structural barriers due to overheads that destroy the spirit of entrepreneurship making good ideas go unnoticed, or provides no incentives for good ideas from employees. The study conducted by Urban and Oosthuizen (2009) indicates that South African mining faces unique challenges to remain sustainable, something that can be achieved through corporate entrepreneurship.

However, the study indicates that the manifestation of entrepreneurship climate in the South African mining industry is mediocre, that there is room for improvement, especially as the industry is characterized by volatility. With the current challenges the industry faces it is unclear as to how entrepreneurial orientation is perceived and the type of corporate entrepreneurship strategies being used by mining houses are in the face of difficult challenges in order to stay competitive in the mining industry. In addition to having to deal with the challenges faced by the big mining houses, junior miners have to deal with the challenges such as the industry not being open to junior miners (Temane 2012). Junior miners face particularly financial problems due to lack of funding and investments. Much of the difficulty to obtain funds is as a result of the mining industry being viewed as high risk mainly due to the uncertainty that surrounds it (Temane 2012). Junior mining houses therefore have to put double the effort in order to remain competitive in the industry, and this they can only do through entrepreneurial activity (Temane 2012).

The ambiguity regarding the perceived value of entrepreneurship and the type of entrepreneurship strategies mining companies use in the face of volatility is observed throughout the international mining community. According to the PWC mining report (2012) top 40 mining companies worldwide posted record profits of \$ 133 billion and generated record cash flows. Additionally, the top 40 invested \$ 98 billion in capital projects, and plan a further \$ 140 billion for 2012 (PWC mining review). Yet the report indicates that companies scale down in the face of volatility. The study done by Urban

and Oosthuizen (2009) indirectly support this, however, profits achieved by companies prove otherwise. It is not clear as to which strategies companies use to minimise risk in uncertain environments from country to country. The PWC and Ernst & Young mining reports do not outline how companies from different countries respond to risk, as certain risks may be more emphasised in some countries, therefore prompting utilisation of different strategies, such as expansion, not scaling down as Ernst & Young suggests, which may account for the drop in market capitalisation, while profits increased.

1.3 Problem statement

Volatility in the external environment inevitably increases the level of risk for organisations. Organisations therefore have to adapt to the environment by being entrepreneurial and through adoption of corporate entrepreneurship strategies. It is therefore the purpose of this study to determine the perceived value of entrepreneurial orientation amongst middle and senior managers and what corporate entrepreneurship strategies are used in the mining industry when firms are faced by challenges such as the Marikana massacre strike that claimed 46 lives. The Marikana strike created a wave of strikes throughout the mining industry, throwing mining houses into disarray with mine workers in other mining companies including Goldfields, Anglo Ashanti and Anglo America demanding wage hikes after the Lonmin mine workers succeeded in getting their demands of a minimum wage met (Plaut 2012). The labor unrest prompted the president of the republic to deploy defense forces to assist police in keeping social order. As a result further uncertainty was created due to volatility of the South African mining industry in addition to the challenges reported by the PWC mining report. The country was further downgraded by Moody's investor services to a negative outlook as an investment destination citing high labor costs and increased concerns about South Africa's future political stability as the main problem (Lindow and Oosterveld 2012).

1.3.1 Main problem

Determine the perceived value of entrepreneurial orientation and the type of corporate entrepreneurship strategies which are deployed in volatile environments to maintain competitive advantage in the SA mining industry.

1.3.2 Sub-problems

The first sub-problem is to determine the perceived value of entrepreneurial orientation amongst senior and middle managers in mining industry.

The second sub-problem is to determine the corporate entrepreneurship strategies employed in volatile environments in order to gain competitive advantage.

The third sub-problem is to determine the relationship between measures of entrepreneurial orientation and measures of corporate entrepreneurship strategies.

1.4 Significance of the study

The study will add to a better understanding of corporate entrepreneurship for the mining industry in an emerging non-western economy country context. Research conducted by Ernst & Young (2012) and PWC (2012) that suggest that mining companies scale down in order to minimize risk generally refers to the mining industry worldwide, and does not take into consideration elements specific to emerging economies that would propel these enterprises to employ different corporate entrepreneurship strategies. This study will also contribute to a better understanding of the South African mining industry and the strategies it employs in the face of volatility.

Emerging markets are also characterized by lack of institutionalization, entrepreneurs in this regard act as agents of change, and formalize previously informal markets, to make them compete in an international stage (Tracey and Phillips 2010:27). This statement refers to problems facing specific countries. Issues particular to certain countries and certain industries are not taken into consideration. While emerging markets may apply similar strategies to minimize risk, different countries or industries

may emphasize certain strategies over others due to the particular challenges of a particular company in a particular environment.

The study will further provide guidance to other researchers to consider industry fit of corporate entrepreneurship strategies that are employed by certain industries in certain environments. Insights into strategies that are industry specific will further challenge corporate executives improve the current entrepreneurial capabilities in order to remain innovative and have a competitive advantage in the market.

1.5 Delimitations of the study

- South African mining industry

Companies listed in the Johannesburg Stock Exchange (JSE).

1.6 Definition of terms

Corporate entrepreneurship is a set of actions centered on entrepreneurial behavior and processes that a firm uses to develop current and future competitive advantages.

1.7 Assumptions

The assumption that because mining in South Africa has some level of entrepreneurial orientation, albeit mediocre, the assumption is that it will engage to some extent corporate entrepreneurship strategies.

2. Literature review

The literature review will look at the state of entrepreneurship in emerging markets, the types of corporate entrepreneurship strategies enterprises employed in volatile environments in order to reduce risk and maintain a competitive advantage. The literature is reviewed in order to identify gaps in existing knowledge, specifically the type of corporate entrepreneurship strategies that mining companies in SA use in volatile environments.

Key terms to be used in the study include entrepreneurial orientation and corporate entrepreneurship.

2.1 Definition of topic

The purpose of this study is to determine the perceived value of entrepreneurial orientation and the type of corporate strategies deployed by South African mining companies in the face of weak formal institutions and volatile environments to reduce risk and maintain competitive advantage.

Entrepreneurship strategy may mean different things to different people (Schindehutte, Morris and Kuratko, 2008; Ireland, Covin and Kuratko 2009:19), but the following definitions are agreed upon definitions. Amit et al. (2000) in Ireland et al (2009) defines entrepreneurial strategy as an internal, organisational phenomenon, with primary focus being on the internal rather than dynamic competitive strategies, while Morris et al. (2008:198) in Ireland et al (2009:20) defines it as a pattern of innovation-related activities and resource allocation that compose one component of the firm's corporate strategy.

Kuratko, Ireland and Hornsby (2001) define corporate entrepreneurship as a strategy and as a set of actions centered on entrepreneurial behavior and processes that a firm uses to develop current and future competitive advantages. They contend that it is a way of responding to the external environment, rather than a concern about positioning of the organisation (Kuratko, et al. 2001).

Phan, Wright, Ucbasaran and Tan (2009) concur and state that corporate entrepreneurship as a strategy enhances a corporation's ability to compete and take risk in the face of uncertainty.

Ireland, Coving and Kuratko (2009) extend the definition and conceive that it is a vision-directed, organisational wide reliance on entrepreneurial behavior that purposefully and continuously rejuvenates the organisation.

2.2 First sub-problem

To what extent do mining companies perceive the value of entrepreneurial orientation?

2.2.1 Mining entrepreneurial orientation

A study conducted by Urban and Oosthuizen (2009) indicates that the manifestation of intrapreneurship climate in the South African mining industry is mediocre, that there is room for improvement, especially that the industry is characterized by volatility. Urban and Oosthuizen state the challenges faced by the mining industry make it face unique challenges to remain sustainable in the near future, and despite these challenges the industry has not extensively engaged in intrapreneurial activity to reduce risk in order to have a competitive advantage.

For organisations to have a competitive advantage, Urban and Oosthuizen (2009:172) quoting Moris and Kuratko (2002: vii), state that continuous innovation and creation of new ideas are necessary for sustainability. And mining companies in this regard need to focus on developing new innovative processes to overcome constraints and to remain competitive, and one way of doing this is by adopting an Entrepreneurial Orientation (EO) (Nayager & Van Vuuren (2005:29). Researchers on EO states that entrepreneurial firms differ from firms that do not have an entrepreneurial orientation, with those that do manifesting characteristics such as autonomy, innovation, risk taking, proactiveness, and competitive aggressiveness (Urban and Oosthuizen 2009:174). Additionally, such firms engage in entrepreneurship strategies such as corporate venturing, which create new businesses or strategic entrepreneurship which is strategic renewal and positioning of an organisation (Kuratko, Morris and Covin 2011:51, Dess and Lumpkin 2005:147).

Depending on the entrepreneurial opportunity available to the organisation, these may occur in different combinations, and success of any of them is contingent on the industry environment. In the mining industry, success of these entrepreneurship strategies is dependent on well execution in the face of environmental challenges such as inflation, lack of infrastructure and capital, provision of licenses to operate, price and currency volatility, fraud and corruption, and nationalisation. With that said, firms with high EO outperform other firms in volatile environments that are low in EO, and tend to be more adaptive (Urban and Oosthuizen 2009:174)

2.2.2 Entrepreneurial Orientation

Lumpkin, Dess 1996, Covin, Slevin 1989, and Lee, Peterson 2000 in Urban (2011) state that EO plays a critical role in organisational success and is a key ingredient in the process of increased performance. EO combines firm level processes, practices and decision-making styles if an organisation has committed to entrepreneurial behavioral patterns. EO is necessitated by the fluctuations in the social-economic system that comes through progress through innovation in the technological and scientific world which has led to new requirements, necessities and viewpoints. In this regard, entrepreneurship plays an important role in the development and growth of societies in social, political and economic fields. Peter Decker in Naweser, Khaskar, Shakhshian and Jahanshahi (2011) are of the belief that the only means of survival in this changing world is innovation and entrepreneurship in which the improvements of economic performance would be developed. Therefore, the industrialized developed countries could discover the role of entrepreneurs in economic growth very quickly and adopt proper and supporting policies in order to promote entrepreneurship characteristics of people and promote the entrepreneurship mood in the different levels of an organisation and of society Naweser et al (2011). Naweser et al further states that EO enterprises should seek to increase their level of EO as EO is the source of great revolution in the industrial, production and servicing fields. Moreover the role of EO as a development engine is that it is also a stimulus for investment, cause of providing employment and is a means to an end in the process of removing market disorder in both developing and

developed countries. It is well understood that EO is not without limitations to overcome. Limitations such as life conditions, economic risk, lack of skill, social risk, lack of obligations, resources have been identified by numerous researchers (Naweser et al 2011).

2.2.3 Dimensions of EO

Table 1

Study	EO Dimensions Used
Miller (1983)	Innovation, Proactiveness, and risk taking
Covub and Slevin (1989)	Innovation, Proactiveness, and risk taking
Covub and Slevin (1989)	Autonomy, innovativeness, risk taking proactiveness, and competitive aggressiveness
Wikilund (1999)	
Lee and Peterson (2000)	Autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness
Kreiser et al. (2002)	Innovation, Proactiveness, and risk taking
Marino et al. (2002)	Innovation, Proactiveness, and risk taking
Messeghem (2003)	Innovation, Proactiveness, and risk taking
Tarabishy et al. (2005)	Innovation, Proactiveness, and risk taking

Source: Sharma and Dave (2011:45).

According to researchers, EO is characterised by three dimensions namely Risk taking Innovation, and Proactiveness. These dimensions are used to measure the entrepreneurial intensity of an organisation (Sharma and Dave 2011:45). Risk taking is described as the willingness to commit resources to projects, ideas, or processes whose outcomes are uncertain and for which the cost of failure would be high. Innovativeness is described as the exhibition of experimentation, exploration, and creative acts as reflected in, for example, new process technologies, new methods of operation, and new business strategies. Proactiveness refers to engaging in forward-

looking actions targeted at the exploitation of opportunity in anticipation of future circumstances, as would be typical of firms that lead and/or pre-empt the actions of others (e.g., market pioneers, early adopters of new technologies) (Sharma and Dave 2011:45). Miller's approach (1983) has been adopted by a plethora of empirical studies that sought to measure EO and its impact on organisational performance. According to Sharma and Dave (2011:45), Miller (1983) and Covin and Slevin (1989) adopted EO as a one dimensional construct by insisting that the three constructs of EO can be combined into one. This approach was later extended by Lumpkin and Dess (1996). This study will take the approach of Lumpkin and Dess (1996) who argue that dimensions of EO can be measured independently of each other and will focus on innovation, proactiveness and risk taking.

2.2.3.1 Innovativeness

According to Lumpkin and Dess (1996:142) the innovation dimension of EO mirrors the propensity of an enterprise to engage in new ideas and creative processes that may result in new products, services and technological processes. Sharma and Dave (2011:46) further state that Schumpeter was among the first to place emphasis on the role of innovation in the entrepreneurial process. His views were of creative destruction, by creating wealth when existing market structures are disrupted by volatility and uncertainty by the introduction of new goods, services, process or procedures that will cause the firm to grow. By some researchers innovation has been posited as most critical trait of the EO traits. EO may occur along a continuum, where one shows the willingness to either try a new way of accomplishing tasks by being enterprising, inventive, imaginative and resourceful. This may be seen in the amount of financial resources committed to research and development, resources utilised to recruit and retain talent pool, achieving new competencies through latest technologies and advanced manufacturing processes (Lumpkin and Dess 1996:144).

2.2.3.2 Risk taking

Risk taking denotes a different meaning depending on the context in which it is applied. In the context of strategy Baird and Thomas (1985: 231- 232) in Sharma and Dave (2011:46), outline three types of strategic risk; venturing into the unknown, committing a

large portion of assets, and borrowing heavily. These types of risks are inherent to entrepreneurs, as starting a new venture entails some level of personal financial and psychological risk.

There is empirical evidence that EO has positive impact on firm performance, and risk behaviors will differ from firm to firm. Other crucial factors determining the level of risk include the way the risk is framed within the particular organisation and the ability to perform under risky situations.

2.2.3.3 Proactiveness

Penrose (1959) in Lumpkin and Dess (1996:146) contend that entrepreneurial managers who are proactive are necessary to provide the vision and direction necessary to engage in opportunistic expansion. Sharma and Dave (2011:46) contend that taking initiative and pursuing new opportunities is to a large extent closely linked to entrepreneurship, and is referred to as proactiveness. Lieberman and Montgomery (1988) in Sharma and Dave further emphasize the importance of being proactive in order to capitalize on market opportunity. Quoting Venkatraman (1989:949), Sharman extends the debate and states that proactiveness is "seeking new opportunities which may or may not related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in the mature or declining stages of life cycle"

For firms to have an EO, the internal structure of the firm needs to support the needs of such an environment because the structure of a company plays a critical role in determining EO of a firm; clear communication of roles and responsibilities, supportiveness of management and high performance driven systems are critical (Urban and Oosthuizen 2009:174). Quoting **Goshal (1996:38)** Urban and Oosthuizen (2009:174) further suggest that a flat, three-tiered company, where front-line employees are the innovators and managers act as coaches that ensure the development of employees and coordination of tasks for employees to achieve their best work is critical.

2.2.5 Institutional theory and entrepreneurial orientation

Generally mining companies are viewed as being bureaucratic and intolerable of innovation and creativity (Urban and Oosthuizen 2009). Ideas and innovations go unnoticed due to structural impediments, particularly in developing economies. For big mining houses this poses a challenge to entrepreneurial orientation in that they have to deal with structural impediments of being big and also lack of institutional imperatives such as government laws that hinder entrepreneurship. Smaller mining companies in this regard are placed under greater pressure in order to survive thus requiring greater entrepreneurial oriented initiatives. In this regard Bernard Swanepoel (Financial report 2012), chief executive officer of Village Main Reef stated that "in South Africa where the debate about nationalisation is entertained, it is damaging to the mining industry, particularly the junior mining companies because nobody will know them if investors are kept being chased away".

High levels of institutional uncertainty in emerging economies such as laws, policies and other forms of obstacles water down risk taking initiatives weaken perseverance and steps to reduce uncertainty poised by risk of uncertain environment. In such an environment it becomes difficult for entrepreneurs to take the risk that might add value to the life of the consumer due to unpredictability of the environment, particularly the less skilful entrepreneurs. Obeng and Piaray (1999) further contend that in highly chaotic environments risk minimizing options become limited with increased institutional uncertainty and only those firms that embrace an entrepreneurial spirit and innovation navigate their way through these environments. Small and Medium business enterprises in these environments take harder hits compared to large conglomerates that have more resources at their disposal to operate in an uncertain environment (Obeng and Piaray 1999:80).

Moreover, according to Obeng and Piaray (1999:80) success of a venture and its growth is largely determined by the depth of the entrepreneurial team, opportunity recognition and control of resources. Creativity of the lead entrepreneur, quality and depth largely influences this process driving growth measures in the midst of institutional obstacles that hinder the entrepreneurial process. Brunneti, Kisunko, and

Weder 1997) in Obeng and Piaray (1999:80) further contend that "quite often, small businesses are the worst victims as they tend to have less knowledge of and involvement in the drafting of new regulations". Smaller businesses are hit the hardest when they do not believe that government policy will persist or that policies are not deemed to be credible. Crime and security, reliability of the judiciary, bureaucratic corruption and red tape and government interference with business are also other factors that cripple business growth and hinder entrepreneurial activity that small businesses have to deal with in trying to compete with bigger players, obtain legitimacy, obtain deal-flow and woo investors to invest in a new venture. Additionally, Bruton, Ahlstrom and Li (2010:427) further establish that legitimacy and access to resources is less problematic for well established organisations because past performance and size often provide legitimacy and access to resources, which places smaller players at the back foot compared to bigger players and requires more creativity to grow a business.

Tracey and Phillips (2010:27) further supports the notion that an uncertain environment hinders entrepreneurial growth, however, they state that while an ideal institution is one that has established ways of doing things to reduce risk to allow for creative innovative ideas to permeate, highly structured institutions that have established ways of doing things where deviation from the norm is discouraged, hinders creativity as employees are forced to conform to the established ways of doing things, a characteristic of major mining houses. Business practices that are taken for granted, industry codes, technological codes all impose constraints on strategic decision making. They contend that this is the advantage smaller businesses have over large businesses. This allows entrepreneurs to be change agents in emerging markets.

2.3 Sub-problem 2

What forms of corporate entrepreneurship strategies are employed by mining companies in volatile environments?

2.3.1 Corporate entrepreneurship

Researchers further illustrate the need for firms to be entrepreneurially oriented by highlighting that great amounts of environmental uncertainty, dynamism and heterogeneity precipitate the need for a corporate entrepreneurship strategy (Kuratko,

et al. 2009), however the mining industry has done little to adopt entrepreneurial strategies. The suggestion according to Kuratko et al (2009) is that firms facing rapidly changing, fast paced, competitive environments react and are best served by implementing a corporate entrepreneurship strategy, where either the individuals, or the organisation pursue opportunities without regard to current resources they control.

Urban (2011:520) quoting Morris, Kuratko 2002; Zahra 1993 states that a plethora of researchers have conceptualized corporate entrepreneurship (CE) as a multidimensional phenomenon that encompasses behaviors and interactions of individuals, organisations, and environmental elements within organisations. It is a state of affairs where organisations pursue new opportunities, create new businesses, business units, innovate in terms of products lines and processes, go through a process of metamorphosis through self-renewal and take risks to achieve their business objectives. Ireland, Covin and Kuratko (2009) concur and state that through CE strategy new organisations are created, others go through a process of self renewal and an atmosphere that encourages risk taking and innovation is created to achieve business objectives in both the ideal and difficult business environments.

According to Ireland, Kuratko and Covin (2003) CE strategy has increasingly gained credibility in recent years as a strategic imperative that firms pursue once triggers in the external environment denote the need for change and strategic adaptation. They define CE strategy as predetermined commitments and actions with a focal point on entrepreneurial behavior and processes that a firm designs and uses to develop current and future competitive advantages.

A choice by an organisation to engage a CE strategy as a means of adaptation signifies a decision to seek a sustained competitive advantage through innovation and entrepreneurial behavior. Fundamentally, CE is oriented toward the pursuit of opportunity and growth and is a function that governs the whole organisation when embraced, states Ireland et al (2003). It serves organisations best when it is a shared ideology that focuses on commitments to ways of acting and responding to the external environment.

This type of organisational ideology is driven by top level managers that establish the entrepreneurial strategic vision and guide the emergence of pro-entrepreneurship organisational architecture. As such top level managers carry the onus of shaping the organisational context of entrepreneurial initiatives, oversee, nurture, and support entrepreneurial behavior as the birth place for new processes and innovations (Ireland et al 2003). In the interconnected process CE strategy middle management managers are responsible executing induced entrepreneurial initiatives.

Conceptual model

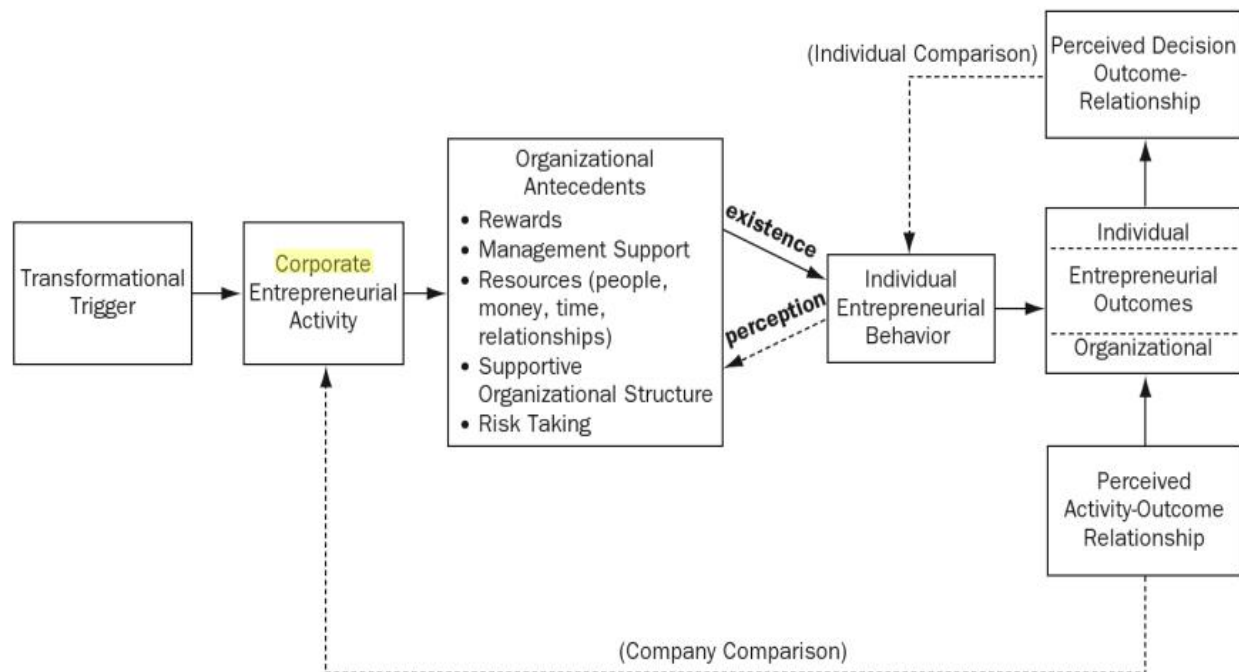


Figure 1: A Model of Sustained Corporate Entrepreneurship: (Kuratko et al 2011:51).

Urban and Oosthuizen's (2009) view of continuous innovation and creation of new ideas is supported by the conceptual model of Kuratko (Kuratko et al 2011:51). Kuratko et al contend that corporate entrepreneurship in an organisation is dependent on the positive perception of entrepreneurship and is also dependent upon individual members of an organisation undertaking innovative activities Kuratko et al (2011:51). The model is an illustration of key relationships that occur in order for entrepreneurship to occur. It illustrates the external trigger that initiates the need for strategic change. Sustained

entrepreneurial activity results from perceptions by individuals in an organisation that the benefit of corporate entrepreneurship will be realised when there is support from top management, there is autonomy, rewards, resources and flexible organisational boundaries (Kuratko et al 2011). Therefore entrepreneurship will occur when both employee and management perceive that corporate entrepreneurship strategies will be of value (Kuratko et al 2011).

2.3.1.1 Antecedents of CE strategy

CE strategy, even at top level management, begins with individual entrepreneurial cognitions that shape the entrepreneurial strategic vision. The entrepreneurial cognitions are the knowledge structure that are used by people to make assessments, judgments and decisions that have to do with opportunity evaluation, venture creation and growth. The specific entrepreneurial cognitions include individual beliefs, attitudes, and values regarding entrepreneurship and are not necessarily limited to these. When these beliefs are about matters for which evaluative judgments are made, they represent entrepreneurial attitudes. Long lasting commitment to these beliefs denotes entrepreneurial values. Meyer and Heppard (2000) in Ireland et al (2009) refer to these deeply held attitudes and beliefs as a dominant entrepreneurial logic that informs an effective entrepreneurial strategic vision that is a reflection of an entrepreneurial mindset. As such top level managers articulating an entrepreneurial strategic vision carry the responsibility of directing attitude and outlook more than behavior. Therefore pro-entrepreneurship models amongst top level managers are essential for the emergence of an entrepreneurial strategic vision.

2.3.1.2 External environment factors

Zahra (1991) in Ireland et al (2009), states that greater amounts of environmental hostility, dynamism and heterogeneity call for a CE strategy. Limpkin and Dess (1996) in Ireland et al concur and suggest that firms facing fast paced, rapidly changing and competitive environments are able to stay ahead by implementing a corporate strategy. There are large numbers of environmental factors that can trigger firms to adopt an entrepreneurial strategy, Morris and Kuratko (2000) identify no less than 40 triggers.

Ireland et al (2009) maintain that an entrepreneurial strategic vision is a logical response to often three related conditions which are competitive intensity, technological change and fragmented and or emerging markets. They focus on three aspects they perceive to be principal external transformational figures that in the presence of pro-entrepreneurship among top level managers lead to an emergence of an entrepreneurial strategic vision. Because of competitive intensity firms have to break out of this parity by creating and exploiting some bases of competitive advantage. This often translates into innovation, where firms pursue technological, product, market, strategic, and or business model innovation that open avenues for exploitation of opportunities to compete on distinct and valued basis or stand the risk of being pushed out of the market by those who do.

The second external transformational trigger is technological change. Technological change requires firms to continuously innovate in areas that will add value to consumers to stay ahead of their competitors. A third external force according to Ireland et al (2009) is fragmentation where fragmenting product domains contribute to heightened environmental heterogeneity that it turn require an adoption of a CE strategy where new opportunities can be exploited. As such these three elements competitive intensity, rapid technological change and conditions of product market fragmentation define an environment that dictates the need for CE strategy.

2.3.2 Forms of corporate entrepreneurship strategy

A plethora of researchers outline the forms corporate entrepreneurship can take namely, corporate venturing and strategic entrepreneurship (Kuratko et al 2011:51, Schindehutte, Morris, and Kuratko 2000).

Table 2: Forms of corporate entrepreneurship

CORPORATE ENTREPRENEURSHIP	
Corporate Venturing ▪ Internal corporate venturing ▪ Cooperative corporate venturing	Strategic Entrepreneurship ▪ Strategic renewal ▪ Sustained regeneration

▪ External corporate venturing	▪ Domain redefinition ▪ Organisational rejuvenation ▪ Business model reconstruction
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Table 2: (Kuratko et al 2011:51, Schindehutte, Morris, and Kuratko 2000).

2.3.2.1 Corporate venturing

Corporate venturing entails various methods for adding, creating or investing in a new business. Bettignies and Chemla (2013) define corporate venturing as the creation of new ventures by large established companies, either inside the organisation or outside, through various financing models and developmental strategies. Battistini, Hacklin and Baschera concur and state that it is the origination, the financing and development of new business ventures. They further state that the growing intensity of corporate venturing has created extra ordinary opportunities for cooperations to redefine their innovation and investment practices. Mawson (2011) has described this as resurgence or the golden age.

The increase in corporate venturing is fuelled by the increasingly globalised markets that are forcing business decision makers to their innovation strategies and models. It is one of the fastest-growing strategies for remodeling the closed, linear approach to corporate innovation into an open, collaborative model with new research and development partners (Battistini et al 2013). Because corporate venturing is driven largely by the need to enhance in-house research and development capability, it has recently proven itself as being able to allow big cooperations to identify and capture the strategic value of emerging technology and entrepreneurial ventures. Corporate Venturing is not new according to Battistini et al (2013). It has existed since the 1960s but firms have come in and out of it, prompted by the cyclical nature of venture capital and market conditions. Commonly it happens in bull markets with share prices that are increasing, robust initial public offerings (IPO) and availability of financing. Entrepreneurial people seek opportunities under such circumstances. Their ability to

operate under these conditions of uncertainty is also largely based on an individual's ability to tolerate risk.

Internal corporate venturing

Maine (2008:8). States that corporate venturing enables innovation within established firms markets that have matured. Backholm adds and states that the idea behind internal corporate venturing (ICV) is to exploit new business opportunities, capabilities provided by smaller firms and to explore and exploit existing opportunities provided by larger firms. Indirect motives of internal corporate venturing include learning from the general process of ICV, development of new competencies, promoting an innovative corporate culture, creating a culture of risk taking through exploration learning. Direct motives in internal corporate venturing include economic objectives that require return on investments (Backholm 1999:17).

According to Backholm (1999:17) research shows that corporate venturing can be associated mostly with companies that have strong financial situations. The structure of a company plays an important role in determining the motives of ICV. Outside structures of a company may negatively affect the ICV initiatives while executive stock ownership positively correlates with ICV. ICV has some dynamics, dynamics which are generally related innovative activities. Researchers have tried to define this innovative process as linear and have been unsuccessful. This innovative process is characterised by uncertainty, requires intensive knowledge, competitions with alternate courses, non-linear dynamics (Backholm 1999:17). This non-linearity is influenced by the environment in which the business operates in. "The most fundamental environment for ICV is the demand of the firm's customers" (Backholm 1999:17). For a venture to survive the trial period must be perceived as worthwhile by both the organisation and its customers in order for the firm to invest energy into the venture.

According to Bettignies and Chelma (2008:517) organisations enter into ICV for different reasons. They engage in ICV to obtain high returns on investments, suggesting that ICV increases the chances of high returns when a firm invests in a venture. It is also used as a form of pay off for star performers in a firm. This pushed dedicated and hardworking employees to put more effort into their work to get better rewards. Creation of new

ventures is also used as a form to retain talent in a firm. Bettignies and Chelma (2008:517) maintain that higher venturing returns and stronger competition for talent should increase venturing investments.

Maine (2008:360) the motives behind internal corporate venturing are stimulating growth when the incumbent's core business has reached maturing and is unable to meet broader organisational goals. ICV is used by firms to explore radical technological innovation amongst other things. These ventures are owned by the parent company so that they can leverage existing resources and capabilities. So that they may also leverage growth, increased profits and organisational learning with also the option of eventually integrating the venture fully into the parent firm. ICVs are high risk and in many cases require decisive action on restructuring, managing risk and abandoning ventures that are not meeting their targets. Maine (2008) further states that active medium-term management of risk has been found to increase the success of a firm's venture. Micromanagement, political constraints, short assessment periods are detrimental to a firm's ICV activity.

Cooperative corporate venturing

Recently researchers have acknowledged that it is no longer only the big organisations that engage in cooperative strategies. The smaller firms are also adopting also adopting cooperative strategies with increasing frequency (McGee, Dowling and Meggisson 1995:565). Cooperative corporate venturing (CCV) has a variety of reason of why it is used by organisations. One of these is to complement existing internal resources, the need to quickly gain technical capabilities to compete in rapidly changing markets and the desire to minimize fixed costs associated with capital assets.

McGee et al. (1995) refer to two theories that have been used by other researchers for analyzing cooperative behavior performance: transaction cost economics and strategic behavior theory. The transaction cost approach focuses more on cost minimization by focusing organisational and contracting efficiency. The transaction cost economics theory argues that firms internalize market transactions through organisational hierarchy as costs increases due to environmental uncertainty or investments in transaction specific assets. Strategic behavior states that the strategic behavior of the firms

management team may influence the relationship between use of cooperative arrangements and performance. This suggests that a firm's management team may choose certain cooperative activities to improve a firm's competitive advantage. In this regard, more experienced managers have a better likelihood of making better decisions when it about choosing the right partners and ventures in corporative activities. McGee et al. (1995) state that the transactional cost view can be detrimental, based on research, they state that it is associated mainly with one corporative strategy, namely contracting for research and development, sales, or service. Analysis of strategic behavior and its effect cannot be expelled from the levels of motivation of top management and their capabilities. Firms that have under developed internal capabilities are more likely to embrace cooperative behavior because external environment is more efficient than developing the required asset internally. Success of cooperative behavior strategy is largely dependent on management experience. According to a study conducted by Kumar (2010), joint ventures create value for individual parent firms. However it is not clear as to whether this value stems from cooperative behavior and common benefits or resource appropriation and private benefits. Nonetheless, on average, states, Kumar, joint ventures create value simultaneously for parent firms and are associated with positive returns than losses. As such joint ventures attest to the efficacy that they are a means of for accessing complementary resources and create value for both partners in a venture, rather than as a means for any one partner to appropriate resources and derive value at the expense of the other (Kumar 2010).

External corporate venturing

External corporate venturing can be defined as a strategic mechanism to attract, qualify, and monetize value from assets that originate externally and/or beyond a clear fit with the organisation's existing strategic focus (Markham, Gentry, Hume, Ramachandran, and Kingon 2005). This definition is inclusive of corporations making investments in small start-up companies, setting up internal incubators that serve as a shield for high risk, high reward assets from ongoing demands of the business, making investments in academic institutions that serve and research and development specialists to come up with new inventions. External corporate venturing is also a

vehicle for companies to make investments in new high growth areas that are not part of a strategic portfolio within an institution.

External investments offer exposure to worldwide opportunities, opportunities that cannot be offered by corporate boundaries. Through venture capital, the advantage of external corporate venturing is that they have systems in place that efficiently filter the good and the bad from thousands of deals that get presented to them. In addition, external ventures give firms the opportunity to outsource research and development, as a means to either expand investment options or to leverage competencies not found in-house. Firms can engage in external venturing either through venture capital funds or the firm being a passive minority investor, or being an active investor that is involved in the management of the business or is part of the board of directors.

The common element with venturing is the use of venture capital methodologies used to make and manage investment decisions. According to Markham et al (2005) venture capital is defined "as equity or equity linked investments in young, privately held companies where the investor is financial intermediary who is involved as a director, an advisor or even a manager of the firm". Venture capital may have different focus points or characteristics. They may be anything such as, but limited to, focus on a portfolio than an individual program, concentration on promising markets instead of technological markets, ability to leverage strengths of the investor and may make fast investment decisions after due diligence process. Corporate venturing is a result of a coherent corporate strategy.

There are various reasons of why firms engage in external corporate venturing. These include technology intelligence; external corporate venturing offers a cost effective way of to scout for new technologies and allows them access to new technologies. External investments may also be a vehicle that is used to strengthen a firm's participation in the broad network of industry customers, suppliers and consumers. Another reason for external investment is to grow a business, either through acquisitions or other alliance structures because in most cases internal investments do not allow for the kind of growth businesses usually strive for. External venturing is also a strategy to enter into new businesses and is a risk mitigation strategy in the sense that it allows firms to view

different technologies and business models with no risk beyond the initial investment in the fund.

While corporate venturing focuses on creating new businesses, strategic entrepreneurship involves entrepreneurship initiatives that go beyond creation of new businesses, it involves innovations that are adopted in the pursuit of competitive advantage (Kuratko et al 2011:51). It can take five forms which are;

- Strategic renewal i adoption of new strategy, sustained regeneration i introduction of a new product,
- Domain redefinition i reconfiguration of existing product,
- Organisational rejuvenation i internally focused innovation aimed at improving strategy, and
- Business model reconstruction i redesign of a business model.

2.3.2.2 Strategic Entrepreneurship

Strategic entrepreneurship is concerned about how firms can create value, and how firms create and sustain competitive advantage while exploiting new opportunities (Hitt, Ireland, Sirmon and Trahms 2011: 57). This premise suggests that strategic entrepreneurship is based on strategic management and entrepreneurship. As such strategic entrepreneurship is concerned with advantage seeking and opportunity seeking behaviors that results in value for firstly individuals, organisations and society at large.

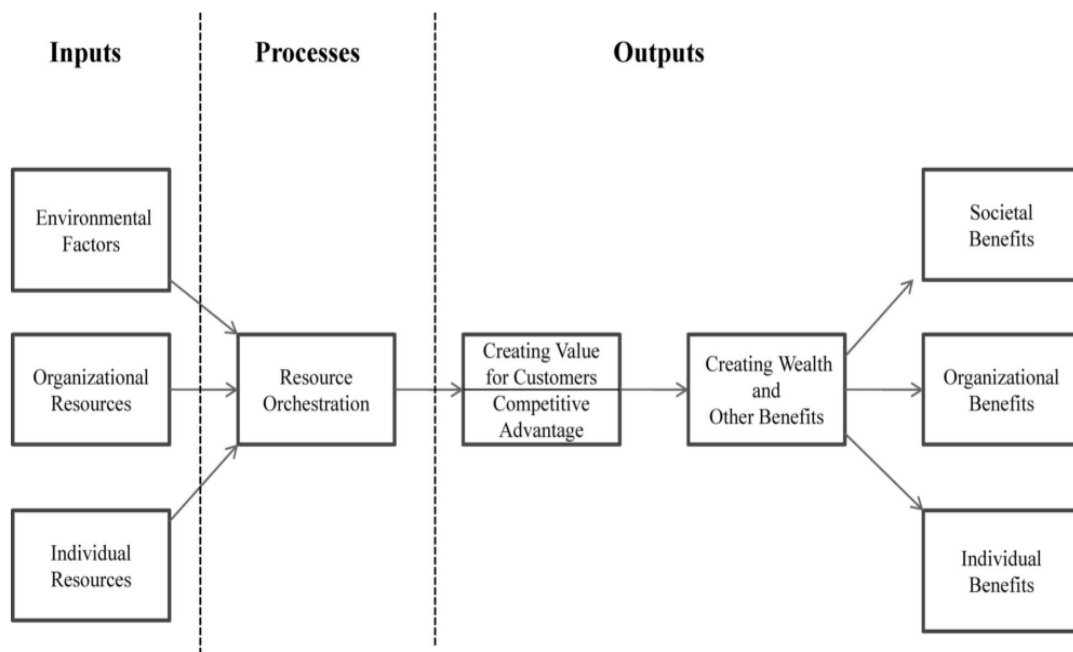


Figure 2: Input-Process-Output Model of SE (Hitt et al 2011:60)

Environmental factors

The external environment is a critical factor for cooperation in that it affects its ability to discover or create opportunities and also the ability to exploit those opportunities. According to research, the relationship between the external environment and a firm affects performance and determines a firm's success in the long run (Hitt et al 2011:60). The external environment allows firms to acquire resources and identify opportunities and exploit those opportunities by being entrepreneurially oriented and through the use of entrepreneurship strategies. Organisations therefore seek out an environment that supports growth, stability and survival. Flexibility in the environment allows firms to acquire financial capital, raw materials, labor and customers. Additionally, scholars argue that entrepreneurially oriented persons gain access to resources in the environment to gain competitive advantage and to create value. Some individuals may

perceive an environment to be resource constrained while some have the ability to exploit any environment, even when it is lacking in resources. Firms made up of such individuals tend to perform better than those who do not have the ability to create opportunities.

Uncertainty in the environment poses a threat to some organisations and reveals opportunities to others. The effect uncertainty has on organisations is that it reduces the amount of information available to firms inhibiting the ability to make future decisions and taking strategic decisions (Hitt et al 2011:61). However, according to Aldrich (2000) in Hitt et al (2011) environmental dynamism has a positive relationship with new venture creation and innovation. In addition they suggest that entrepreneurial actions under uncertain environments are based on an individual's risk propensity.

The element of organisational resources highlights the importance of culture and leadership in an organisation. In order to grow entrepreneurially and to create new ventures firms need effective leadership. Effective leaders in entrepreneurial firms understand that the culture of innovation and of an entrepreneurial spirit must be supported in an organisation in order for it to maintain its competitiveness. This support structure ensures that individuals gain access to resources in the environment to generate competitive advantage to create value. An entrepreneurial culture also encourages risk taking where failure is tolerated, where change is viewed as a continuous process that brings about opportunities. Entrepreneurial leaders create a vision into which the followers buy into to commit to opportunity searching and exploitation (Hitt et al 2011:62). Strategic entrepreneurship is characterized by the strategic renewal, organizational rejuvenation and business model reconstruction.

Strategic renewal

Saez-Martinez and Gonzalez-Moreno (2011:44) describe strategic renewal as the manner in which a firm transforms in terms of changing the focus of operation or strategic approach. Through strategic renewal organisations transform through ideas that serve as a foundation that they are built on. Convin and Miles (1999:52) describe it as the process where organisations redefine their relationship with markets and industry competitors by altering how it competes. As such this renewal process can occur when

a firm develops a new strategy or when it employs measures to try and increase competitiveness through improved execution of an existing strategy.

Previous research states that strategic renewal is related to organisational performance, growth and profitability (Saez-Martinez and Gonzalez-Moreno 2011:44). Previous research also found that the relationship that exists between strategic renewal and performance was significant and increased over time. But this positive relationship is characterized by the first mover advantage which allowed firms to enter into new markets, develop new technologies, and launch new products or services. The first mover advantage is costly for competitors to replicate. The ability of firms to recognize and take advantage of emerging opportunities enables firm to stay ahead of competitors and gain competitive advantage that leads to superior performance,

The environment plays a critical role in the decision to implement strategic renewal as a strategy because companies enter into new ventures in anticipation or in response to the environment. The environments in which firms operate in pose challenges and opportunities that organisations must respond to entrepreneurially. In this regard environments serve as a source of ideas for innovations, suppliers, competitors, and customers, all provide incentives for firms' innovations, renewal and venturing (Saez-Martinez and Gonzalez-Moreno 2011:44).

Management control is another critical element to ensure the success of strategic renewal according to Poskela and Martinsuo (2009:671). They contend that a critical activity to ensuring success of strategic renewal is by ensuring that decisions serve the best interest of the company and fulfill long term strategic objectives. All critical decisions that include target markets, value proposition, product costs, and product functionalities should all be clearly define before strategic renewal initiatives are employed. Mueller (1993:15) agrees with Poskela and Martinsuo and states that clear definition of strategic purposes is equally critical for organisational rejuvenation.

Organisational rejuvenation

During a corporate rejuvenation initiative, the critical task for management is to provide vision and lobby for employee commitment by clearly defining long term goals that

relate to the core of the business. The process of organisational rejuvenation requires skills to manage across interfaces of various organisational functions. Knowledge and competence become assets to organisation in the process of organisational rejuvenation because the managers are aware of the strengths and weaknesses that give will give the company strategic advantage (Mueller 1993:15).

Where there is lack of communication and unclear strategies by top management corporate reorganisation strategies will not be effective. Organisational rejuvenation requires that there be careful monitoring of reputation and other organisational competencies. Lack of funds and insufficient cross-functional information sharing and unsatisfactory commercial application of technological developments hinder organisational rejuvenation.

Business model reconstruction

A plethora of researchers have attempted to capture the essence of Business Model (BM) reconstruction and all have come up with a different view of what it is. Drucker (1954) in Sabir et al (2012) states that BM addresses the fundamental question of who the customer is, what is the value of the product or service and how does the firm intend to earn wealth. Makinen and Sappanen (2007) in Sabir et al (2012), state that BM acts as a bridge between strategy and operations. (BM) enables organisations to have commercial opportunities and gives managers the ability to create, deliver, and capture values in efficient ways that may add value to firm in the long run (Sabir, Hammed, Rejhman & Rehman 2012:160). Early authors state that it depicts how value is exchanged among economic participants (partner, customer and supplier) while different in their degree of economic control and value integration. In the same vein other authors discussed the subject in relation to the interaction between strategy and the business model. Others depicted BM as an organisational design with focus on resource base, sense making, nature of innovation and opportunity. Zott, Amit, and Massa (2010) in Sabir et al dissected the business model theory into three schools of thought. First being the e-commerce schools of thought which gives explanation on business model on the context of internet based businesses and firm's role in their own eco-system. The strategy school of thought explains value creation process and which

sources are used to gain sustainable competitive advantage. The technology and innovation school of thought looks at business model from the perspective of commercialization aspects of technology and innovation (Sabir et al 2012). Weil and Vitale further add business model schematics with four characteristics such as required competencies, success factors, revenue generation, and strategic and value propositions.

The purpose of a business model is context specific. Companies in start-up phase, profit and non-profit, and technology and innovation focused companies will use a different BM to as compared to other firms to identify opportunities and exploit opportunities.

While there are five constructs of strategic entrepreneurship, for the purpose of this study these will be limited to strategic renewal, organisational rejuvenation and business model reconstruction. According to Schindehutte et al (2000) literature suggests that corporate entrepreneurship is externally driven, that under hostility in the external environment, there is a statistical relationship that exists between the entrepreneurial orientation of a company and performance. Schindehutte further suggest that there is a strong need for entrepreneurial management when firms face diminishing opportunity streams, rapid changes in external environment, and shortened decision windows. This gives the indication that principal triggers for corporate entrepreneurship are aggressive competitor moves, changes in industry and market structure, regulatory structure, and other external factors that force firms to increase their EO. Quoting Tushman and Romanelli (1985) Schindehutte et al (2000) argues that the orientation of companies are triggered by the emergence of dominant design, substitutes products, technological or major legal or social events. Successful orientations occurred in organisations whose managers foresaw the need for radical change and initiated it before the crisis occurred.

2.4 Third sub-problem

Examine the relationship between entrepreneurial orientation and corporate entrepreneurship

According to Schendel and Hitt, 2007 in Hitt et al (2011) strategic management and entrepreneurship are two different things, offering unique opportunities and insights, but that they constitute strategic entrepreneurship. At the core of strategic management is competitive advantage and creation of wealth. This suggests that corporate strategy evolves with the purpose of achieving an array of business decisions that are important to the stakeholders. Strategic management is the full set of commitments, decisions, and actions required for a firm to achieve strategic competitiveness. Strategic management has a strong bias on outcomes that influence the firm's ability to generate profit. While strategic management has been described as a definitive subject with focus, entrepreneurship on the contrary has been labelled as a developing field with scholars unable to come to an agreed definition of the field (Hitt et al 2011). Shane and Venkataraman 2000 in Hitt et al (2011) described the field of entrepreneurship as the scholarly examination of how, by whom, and with what effects opportunities are created. They argue that entrepreneurship is the process of discovery, evaluation and exploitation of opportunities, and the set of individuals who discover and exploit these opportunities. Hitt et al expanded this definition to include focus on wealth creation as an outcome of the process of entrepreneurship. Entrepreneurship is context specific; it is a process where individuals or teams bring together resources to exploit market opportunities. However in order for wealth to be created value must be created. Entrepreneurs in this regard create value by leveraging innovations to exploit opportunities.

In this regard strategic management and entrepreneurship are focused on creating wealth through exploitation of opportunities, an entrepreneurial act. Strategic management ensures sustainability of competitive advantages. Both entrepreneurship and strategic management therefore, according to Hitt et al (2011) are concerned about growth, creating value for customers, and subsequently creating wealth for owners. Strategic entrepreneurship and corporate venturing allow managers and executives to manage and address the challenges of exploiting competitive environments while exploring for opportunities. Strategic entrepreneurship involves both the opportunity seeking nature of entrepreneurship and the advantage provided by strategic management through its advantage seeking behaviors. For big organisations

strategic entrepreneurship is advantageous in that it challenges them to be more entrepreneurial. The smaller firms are challenged to be more strategic through strategic entrepreneurship.

2.5 Conclusion

. Generally mining companies are viewed as being bureaucratic and intolerable of innovation and creativity (Urban and Oosthuizen 2009). In many mining companies ideas go unnoticed due to bureaucracy and lack of incentives for people who bring good ideas to the fore. These findings are supported by the GEM report, stating that South Africa constitutes a small percentage of innovative new and established firms. This suggests that the perceived value of corporate entrepreneurship is low in the mining industry. Additionally, According to Schindehutte et al (2000) literature suggests that corporate entrepreneurship is externally driven, that there is under hostility in the external environment, a statistical relationship that exists between the entrepreneurial orientation of a company and performance. Based on the above, this study hypothesises that:

Based on the conceptual model, this study will limit its inquiry to the perceived value of entrepreneurship and corporate entrepreneurship strategies that characterize entrepreneurship outcomes.

3. Research methodology

The purpose of this research is to determine the perceived value of corporate entrepreneurship and the type of corporate entrepreneurship strategies that are deployed in volatile business environments in emerging markets by mining companies to reduce risk and maintain a competitive advantage. The research paradigm outlines how this research will be carried out.

3.1 Research paradigm

The purpose of this research requires quantitative measurement of entrepreneurial orientation and corporate entrepreneurship strategies. Therefore the positivist social research approach is most appropriate.

“Positivism is an organized method for combining deductive logic with precise empirical observations of individual behavior in order to discover and confirm probabilistic causal laws that can be used to predict general patterns of human activity” (Welman 2005:25). Therefore “Positivist social research has as its goal on the acquisition of knowledge to describe the phenomena that we experience - what we can observe and measure” (Waters 2012:29). Positivists use experiments, surveys and statistics to gather information. For the purpose of this study, the information will be gathered through surveys.

The methodology will be a quantitative study, using questionnaires because a large sample of potential respondents will be asked close-ended questions in order to assess their perceptions of entrepreneurial orientation and the forms of corporate entrepreneurship strategies used by their firms. The respondents will be managers in companies of the sampled population.

3.2 Research Design

The experimental research design to be used for the purpose of this study is a non experiment cross sectional study. It is appropriate in that there will be no treatment that will be administered to the firms that will be responding and only one measurement occasion.

Babbie and Mouton (2009:75) describe a research design as a plan or a blueprint of how one intends to conduct research. Because different types of research try to answer different questions, they use different combinations of methods and procedures. The types of measurements, sampling methods, data-collection and analysis methods that researchers make use of in a particular study, as well as the sequence in which they are used is determined by the research problem and the kind of information or evidence that is required to address that problem (Babbie and Mouton, 2009:75).

The purpose of this study is to determine the perceived value of entrepreneurial orientation and the type of corporate entrepreneurship strategies that are utilised by mining companies in the emerging economy of South Africa in volatile environments.

To address the research problem surveys will be used. The advantage of surveys is that they can generalize to a larger population, can be condensed to statistics, measures occurrences, actions and trends, indicates extensive attitudes held by people, and have precision, are definitive and standardized.

3.3 Population and sample

3.3.1 Population

The population for the study was mining companies listed in the Johannesburg Securities as the study focuses only in the South African mining industry.

3.3.2 Sample and sampling method

Research objectives determine the sampling frame, and sampling techniques. For the purpose of this study, the non-probability sampling technique was most appropriate because the technique is arbitrary and subjective, and none of the members in the population had a known chance of being included in the sample (Cooper and Scheindler 2011: 369). The sampling frame was South African junior mining companies listed in the JSE because these had not grown and generated overheads that restrict innovation and entrepreneurship due to bureaucracy as the study by Urban and Oosthuizen (2009) indicated and because these had to even be more entrepreneurial than bigger mining companies to stay competitive in the mining industry. The National Small Business Act

of 1996 defines junior or small and medium mining companies as those that employ at least 200 people, have an annual turnover of about 30 million and a total gross net asset value of at least 18 million, is South African based and uses high levels of technology and mechanisation. (Metemeri and Peterson 2002, www.goldinsouthafrica.com). However, South African Revenue Services defines junior mining companies as those that carry on trade of mining activities, either exploration or production, which is either an unlisted company as defined in section 41 or listed on the alternative exchange division of the Johannesburg Securities Exchange (JSE) Limited. A qualifying company must meet the following:

- a) The company is a resident
- b) The company is not a controlled group company in relation to a group of companies
- c) The tax affairs of the company are in order and the company has complied with all the relevant provisions of the laws administered by the Commissioner;
- d) The company is a junior mining company
- e) The company is not carrying on any impermissible trade; and
- f) The sum of the investment income, as defined in section 12E (4) (c), derived by that company during any year of assessment does not exceed an amount equal to 20 per cent of the gross income of that company for that year

For the purpose of this research paper, the SARS definition of junior mining companies was adopted. The companies that were chosen represent a purposive convenience sample which is easy to obtain (Neuman 2011).

Three junior mining companies were chosen, Village Main Reef, Pan African Resources and Gold One were sampled, with a sample population of 300. Of the three hundred, fifty responses were obtained, which three were incomplete.

3.4 Research instrument

The research instrument that was utilized in this research was the Miller/Coven and Slevin (1989) EO scale which was later adapted by Lumpkin and Dess (1996). Questionnaires are the most common form of data collection (Cooper and Scheindler 2011: 320). They are used to measure perceptions and attitudes, and therefore are an appropriate instrument to measure perceptions mining companies towards entrepreneurial orientation and to determine the entrepreneurship strategies entrepreneurial the companies use.

The questionnaire was structured in following manner:

- Section 1

Section one sought to answer the first sub-problem of how mining companies perceive the value of entrepreneurial orientation. Entrepreneurial orientation is manifested in a firm by a firms propensity to show proactiveness, innovation and risk taking. Researchers on EO state that entrepreneurial firms differ from firms that do not have an entrepreneurial orientation, with those showing EO having better performance results. Section one puts forward the hypothesis therefore that entrepreneurial orientation has impact on performance of a firm.

Section 2

Sought to answer the second sub-problem of what the forms of entrepreneurship strategies that are employed by mining companies in volatile environments are. Schindehutte et al (2000) states that literature suggests that there is a statistical relationship that exists between the entrepreneurial orientation of a company and performance. That by entrepreneurial management through corporate strategies firms can limit the effects of diminishing returns, rapid changes in the external environment, and be able to cope with shortened decision windows.

3.5 Procedure for data collection

Frequently used data collection methods include surveys, experiments, personal or telephone interviews and secondary data. For the purpose of this study online questionnaires were utilised. The questionnaires were emailed to the participants. The advantage of questionnaires is that respondents could fill in at their own time and return to the researcher. A disadvantage was that they can be filtered by spam. To overcome this problem, the questionnaires were emailed to a CEO of the company, the CEO then distributed via email to the targeted managers within the organisation. Response was minimal with only sixteen responses by mid February. The questionnaire was then sent to members of the Chamber of mines, to which there was no response. Questionnaires were then printed out and handed to respondents physically in order for them to fill out. In total 50 responses were obtained, of which three were incomplete.

3.6 Data analysis

The data that was collected from respondents was coded according to the consistency matrix and analyzed. The data was interpreted through the use of graphs depicting the frequency distribution of variables.

To establish the link between entrepreneurial orientation and corporate strategies, first a histogram was used to make graphical representation of the distributions of single variables. The histogram is created by performing frequency counts in categories. The aim of the histogram was to understand the nature of a variable by characterizing the shape of its distribution (Hair, Black, Babin and Anderson 2010:38). The graphical distributions were followed by cluster analysis. The main objective for cluster analysis was to partition a set of objectives into two or more groups based on their similarities for a set of specified characteristics (Hair et al 2010:517). Cluster analysis can address a combination of questions. It develops a simplified perspective by grouping observations for further analysis. Thus, instead of viewing observations as unique, they can be viewed as members of clusters and can be profiled by their general characteristics. Cluster analysis further helps with relationship identification. When clusters have been

defined and the underlying structure of the data represented in the clusters, relationships among the observations that are typically not possible with the individual observations can be revealed.

3.7 Limitation of the study

The study intends to measure the perceived value mining companies have towards entrepreneurial orientation and the corporate entrepreneurship strategies they use. The limitations of the study are that while the study may reveal perceptions of entrepreneurial orientation and corporate entrepreneurship strategies that mining companies use, and also how corporate entrepreneurship strategies and entrepreneurial orientation relate to each other, the study was not be able to depict or quantify the extent to which entrepreneurial orientation and corporate strategies affect performance of mining companies. In which case a gap to research as to how entrepreneurial orientation and corporate entrepreneurship strategies affect the bottom line of mining companies.

3.8 Validity and reliability of study

Research bias poses a threat to reliability and validity of a study. Research bias occurs when there is selective noting of only those parts that the researcher chooses to see to support their attitudes and predetermined findings of the study (Dane 1990: 149).

Saunders, Lewis, and Thornhill (2009) describe validity as:

- The extent to which the data collection method accurately measures what was intended to be measured;
- The extent to which the findings of the research accurately reflect what they profess

3.8.1 External validity

Krippendorff (2004:313) describes validity as the extent to which the results from a particular research are generalizable. Other forms of validity are described, such as

descriptive validity (the factual accuracy of what the researcher reports), interpretative validity. The challenge to external validity regarding this study is that the sampling frame has been conveniently selected and represents only junior mining companies that were easily accessible. However, based on the conceptual model, and existing literature, a positive perception of entrepreneurial orientation will result in entrepreneurial activity and will also result in the use of corporate entrepreneurship strategies in order to gain competitive advantage. The companies will give an indication of the corporate entrepreneurship strategies that are currently in use and how it relates to the degree of entrepreneurial orientation.

3.8.2 Reliability

Research is reliable when the method of data collection produces the same findings when study is conducted by another researcher when used under the same conditions, with the same subjects (Dane 1990: 149). Dane further suggests that reliability can be enhanced by using the research instrument in a consistent manner from participant to participant, and criteria should be set for researcher inputs and judgements so that they are not variable.

According to Coltman 2008, in Covin and Wales (2011), reliability of the study is threatened by the fact that while the individual scales of EO are interrelated, these may have different antecedents and consequences, which is in contradiction with the reflective measurement models that assume that the effect indicators have same antecedents and indicators.

3.8.3 Internal reliability

To test for internal reliability Chronbach's alpha and inter-correlation items were used. Cronbach's alpha tests for internal consistency by measuring the degree to which instrument items are homogeneous and reflect the same underlying construct (Cooper and Schindler 2011:284). Analysis had two stages, first analysis of the original scales, then the revised scale. The acceptable minimum measure for any scale for reliability is 0.6 using cronbach's alpha.

4. PRESENTATION OF RESULTS

4.1 Introduction

The results are going to be presented in three sections, each one pertaining to each sub-problem, following the sequence of sub-problem 1, 2 and 3 respectively.

4.2 Demographic profile of respondents

There were 47 respondents of which most were managers, two were CEOs and two were directors.

4.3 Results pertaining to sub-problem 1

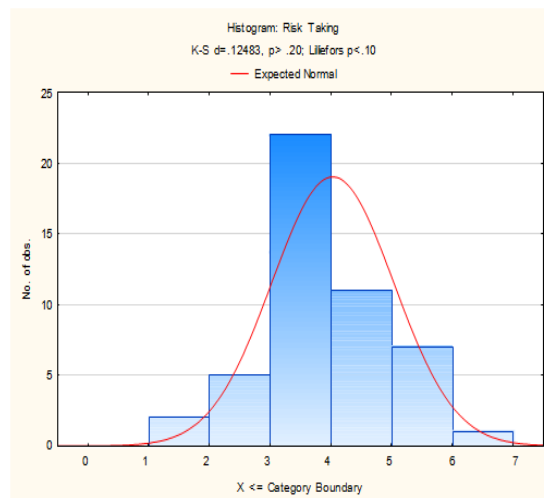
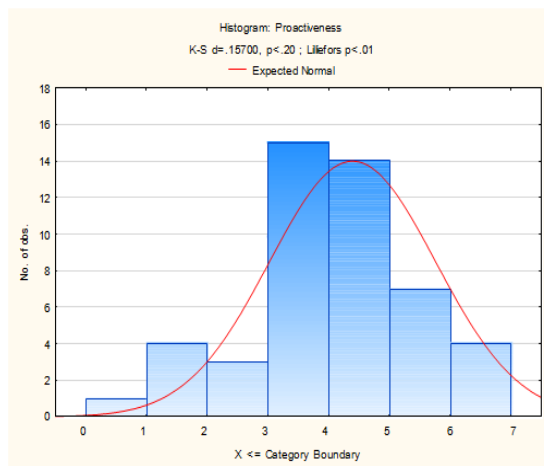
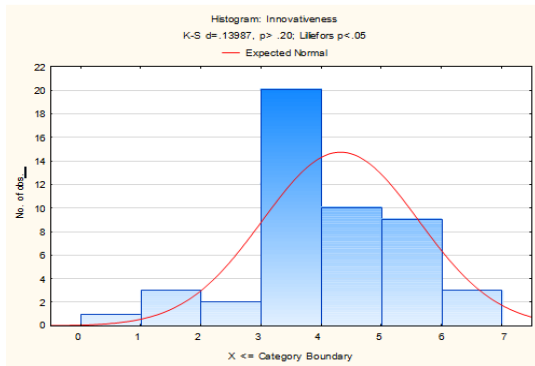
The first sub-problem is to determine the perceived value of corporate entrepreneurship amongst senior and middle managers in mining industry.

Entrepreneurial orientation consists of three measures: innovativeness, proactiveness and risk taking. In presenting the results to the measures of EO, Reliability scales of these three measure will presented in the table below, followed by distribution scales, descriptive statistics of scales and inter-correlation of scales.

a) Reliability of scales: Table 3

		Original scale			Revised scale		
Construct	Scale	Number of items	Cronbach alpha	Average inter-item correlation	Number of items	Cronbach alpha	Average inter-item correlation
Entrepreneurial Orientation	Innovativeness	6	0.22	0.05	2	0.58	0.41
	Proactiveness	4	0.1	0.05	2	0.66	0.54
	Risk Taking	6	0.65	0.24	5	0.68	0.3

b) Figure 3: Distribution of scales:



The average for the distributions was four and above, indicating the EO of the companies based on the measure of EO.

c) Descriptive statistics

Table 4

	Valid N	Mean	95% Confidence interval for mean		Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std. Dev.	Skewness	Kurtosis
Innovativeness	48	4.32	3.95	4.70	4.00	1.00	7.00	3.50	5.25	1.30	-0.11	0.57
Proactiveness	48	4.40	4.00	4.79	4.50	1.00	7.00	4.00	5.00	1.37	-0.29	0.25
Risk Taking	48	4.03	3.74	4.33	4.00	1.40	6.40	3.60	4.50	1.00	-0.16	0.80

d) Inter-correlations of scales

Table 5

	Innovativeness	Proactiveness	Risk Taking
Innovativeness	1	0.66	0.44
		***	**
Proactiveness		1	0.31
			*
Risk Taking			1
*** p<0.001			
** p<0.01			

* p<0.05			
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4.4 Results pertaining to sub-problem 2

The second sub-problem is to determine the corporate entrepreneurship strategies employed in volatile environments in order to gain competitive advantage. Corporate entrepreneurship is made up of corporate venturing and strategic entrepreneurship. Corporate venturing consists of the following measurements: internal corporate venturing, cooperative corporate venturing and external corporate venturing. Strategic entrepreneurship has five constructs, but for the purposes of this study these will be limited to three, namely: strategic renewal, organizational rejuvenation and business model reconstruction. Results for these will be presented as follows:

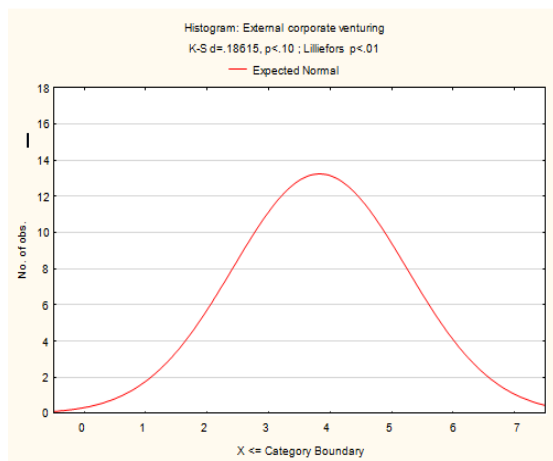
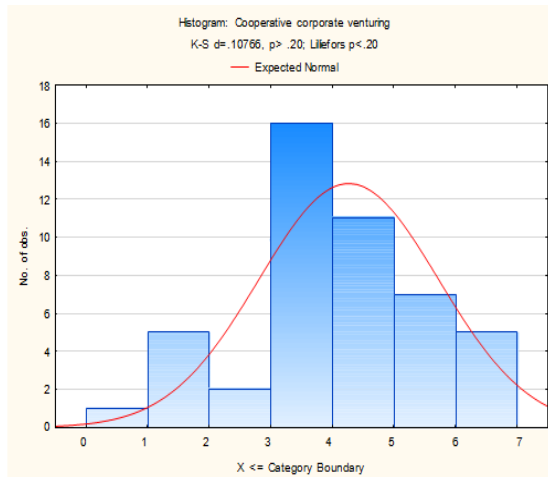
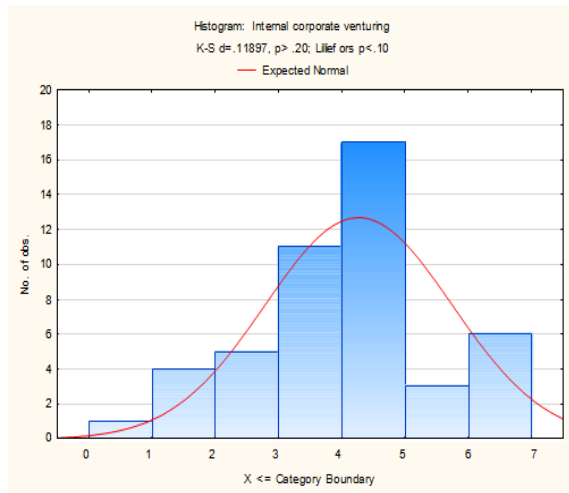
a. Reliability of scales

Table 6

Construct	Scale	Number of items	Cronbach alpha	Average inter-item correlation
Corporate venturing	Internal corporate venturing	3	0.91	0.79
	Cooperative corporate venturing	3	0.93	0.82
	External corporate venturing	3	0.93	0.82
Strategic entrepreneurship	Strategic renewal initiatives	3	0.94	0.84
	Organisational rejuvenation	3	0.9	0.73
	Business model reconstruction	3	0.9	0.72

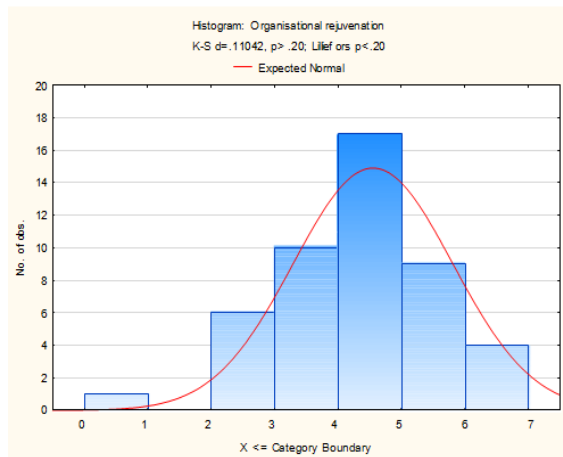
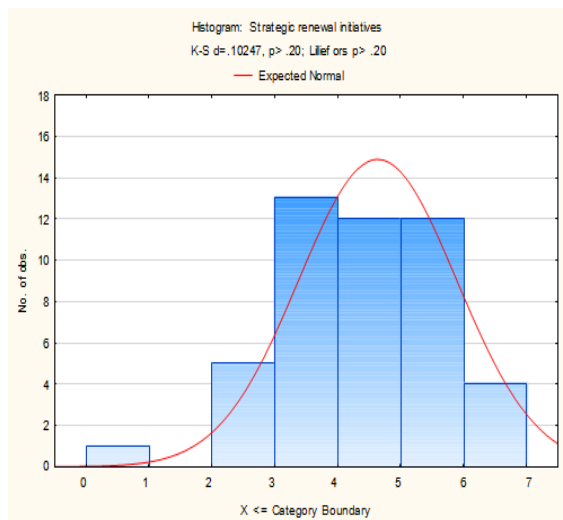
b. Distribution of scales

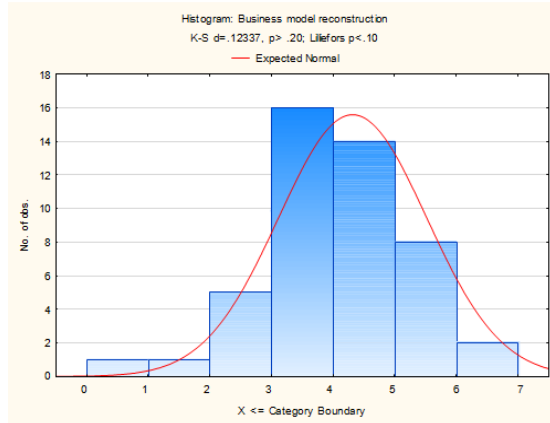
Figure 4: Scales relating to corporate venturing:



Of the corporate venturing initiatives, cooperative corporate venturing is the one that seems to be used the most. Internal corporate venturing has an average of block five, showing the favorable predisposition of mining houses towards it. The histogram of external corporate venturing yielded no results.

Figure 5: Scales relating strategic entrepreneurship:





The averages for strategic entrepreneurship histogram responses are four and above, clustering at block five and block six, giving an indication of the extent to which strategic entrepreneurship initiatives are used.

c. Descriptive statistics

Table 7

	Valid N	Mean	95% Confidence interval for mean		Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std. Dev.	Skewness	Kurtosis
Internal corporate venturing	47	4.27	3.84	4.70	4.33	1.00	7.00	3.33	5.00	1.48	-0.07	-0.12
Cooperative corporate venturing	47	4.27	3.84	4.70	4.00	1.00	7.00	3.33	5.33	1.46	-0.22	0.04

g												
External corporate venturing	47	3.8 3	3. 41	4. 25	4.00	1.00	7.00	3.00	4.67	1.42	-0.26	- 0.22
Strategic renewal initiatives	47	4.6 4	4. 27	5. 01	4.67	1.00	7.00	3.67	5.67	1.26	-0.33	0.26
Organisational rejuvenation	47	4.5 5	4. 18	4. 92	4.67	1.00	7.00	3.67	5.33	1.26	-0.42	0.37
Business model reconstruction	47	4.3 2	3. 97	4. 67	4.33	1.00	7.00	3.67	5.00	1.20	-0.21	0.65

d. Inter-correlation of scales

Table 8

	Internal corporate venturing	Cooperative corporate venturing	External corporate venturing	Strategic renewal initiatives	Organisational rejuvenation	Business model reconstruction
Internal corporate	1	0.70	0.50	0.66	0.68	0.66
		***	***	***	***	***

venturing						
Cooperative		1	0.61	0.45	0.58	0.46
corporate			***	**	***	**
venturing						
External			1	0.18	0.43	0.27
corporate					**	
venturing						
Strategic				1	0.72	0.71
renewal					***	***
initiatives						
Organisation					1	0.7374
al						***
rejuvenation						
Business						
model						
reconstructio						1
n						
*** p<0.001						
** p<0.01						
* p<0.05						

e. Clusters of corporate entrepreneurship strategies

I. Cluster profiles, means based on standard deviation measures

Table 9

Centroids for k-means clustering (Standadised variables)								
Clust er	Interna l corpor	Cooperat ive corporat	Extern al corpor	Strate gic renew	Organisati onal rejuvenatio	Business model reconstruc	Numb er of cases	Perce nt

	ate venturi ng	e venturing	ate venturi ng	al initiativ es	n	tion		
1	-0.54	-0.55	-0.46	-0.44	-0.47	-0.34	29	61.7
2	0.87	0.89	0.74	0.71	0.75	0.55	18	38.3

II. Cluster profiles: Plot

4.5 Sub-problem 3

The third sub-problem is to determine the relationship between measures of EO and measures of corporate entrepreneurship strategies.

i. Inter-correlation of scales

Table 10

Internal corporate venturing	Cooperative corporate venturing	External corporate venturing	Strategic renewal initiatives	Organisational rejuvenation	Business model reconstruction
0.71 ***	0.46 **	0.31 *	0.38 **	0.50 ***	0.57 ***
0.68 ***	0.51 ***	0.33 *	0.43 **	0.36 *	0.42 **
0.57 ***	0.28	0.28	0.54 ***	0.45 **	0.40 **

ii. T-test comparison of clusters on corporate entrepreneurship strategies

Table 11

EO measures (Standardised)	Mean of Cluster 1	Mean of Cluster 2	t- value	df	p	SD of Cluster 1	SD of Cluster 2
Innovativeness	-0.34	0.44	-2.90	45	**	0.94	0.82
Proactiveness	-0.40	0.54	-3.66	45	**	0.94	0.72
Risk Taking	-0.21	0.40	-2.11	45	*	0.80	1.19

5. DISCUSSION OF RESULTS

5.1 Introduction

Results presented in chapter four will be discussed in the section that follows. Discussion of the results will start by discussing results pertaining sub-problem 1. The manner in which the results will be discussed is to discuss sub-problem 1, followed by sub-problem 2 and 3.

5.2 Demographic profile of respondents

There were 47 respondents of which most were managers, two were CEOs and two were directors.

5.3 Results pertaining to sub-problem 1

The first sub-problem aimed to determine the perceived value of EO amongst senior and middle managers in the mining industry. The manner in which perceptions of EO were measured is through innovativeness, proactiveness and risk taking. Post analysis, reliability scales of the three measures were presented in the form of a table to be discussed shortly.

5.3.1 Reliabilities

To test for internal reliability Chronbach's alpha and inter-correlation items were used. Cronbach's alpha tests for internal consistency by measuring the degree to which instrument items are homogeneous and reflect the same underlying construct. Analysis had two stages, first analysis of the original scales, then the revised scale. The acceptable minimum measure for any scale for reliability is 0.6 using cronbach's alpha.

Innovativeness

The first scale contained all six items and it produced an alpha of 0.22 with an average inter-item correlation of 0.05 which indicates that the instruments do not measure the same underlying construct and therefore cannot be relied upon. The items were then reduced until there were two items remaining that produced an alpha of .58 and an average inter-item correlation of 0.41 as depicted in the revised scale which is acceptable and reliable.

Proactiveness

Proactiveness had an original scale that contained four items. The items produced an alpha of 0.1 with an inter-item correlation of 0.05 that indicates that the constructs are inconsistent internally and are not reliable. The revised scale was reduced to two items that produced an alpha of 0.66 and an average inter-item correlation of 0.54 that indicated that the scale has internal consistency

Risk taking

The risk taking scale had six original scale items that produced an alpha of 0.65 with an average inter-item correlation of 0.24. One item was dropped from the scale and the cronbach's alpha of the revised scale came to 0.68 with an average inter-item correlation of 0.3 which is acceptable as it is above the required minim score of 0.6.

5.3.2 Distributions

A histogram was used to make graphical representation of the distributions of single variables. The histogram was created by performing frequency counts in categories. The aim of the histogram was to understand the nature of a variable by characterizing the shape of its distribution. Since the distributions are created to assess their normality, the normal curve was superimposed on the distribution to assess the correspondence of the actual distribution to the desired normal distribution.

Innovativeness

The histogram of innovativeness indicates that the distribution deviates from the normal distribution. The measure that deviates most is the Kurtosis that represents that peakedness or flatness of the distribution. The middle of the distribution peaks above the normal distribution as shown by the superimposed normal curve. This indicates that the respondents have a positive view as to the degree to which innovative initiatives are engaged in their organisations. The distributions skewed to the right, a negative skew, indicating that a large number of the respondents are likely to think of their organisation as moderately innovative.

Proactiveness

The histogram of proactiveness slightly deviates from the normal distribution with the two middle bars peaking above the superimposed normal curve. This means that majority of the respondents view their organisation as being proactive. A bar on each of the two tails is higher than expected. The histogram shows no appreciable skewness to one side or the other of the distribution.

Risk taking

The histogram of risk taking slightly deviates from the normal distribution with the middle bar peaking above the superimposed normal curve. This means that majority of the respondents view their organisation as being risk taking. The histogram shows no appreciable skewness to one side or the other of the distribution. The distributions were followed by descriptive analysis.

5.3.3 Descriptive statistics

Innovativeness

Innovativeness has a mean of 4.3, meaning that the respondents scored 4.3 in their perception of whether their firm is innovative or not, while of the respondents may be lower than this and others higher. Innovativeness has a standard deviation of 1.3, meaning that 1.3 of the spread of data cannot be accounted for. According to Lee (2012) Standard deviation captures the spread of data around the average within which about 2/3 of the data is expected to lie. Thus more than 2/3 of the spread of data is accounted for in this regard, showing the level which managers perceive their firms to be innovative.

Proactiveness

Proactiveness has a mean of 4.4, with a standard deviation of 1.4. The inference is that 4.4 of the respondents perceive their firm to be proactive, while others may have scored lower and other others higher than the mean. The standard deviation of 1.4 means that of the available data, 1.4 cannot be accounted for, showing the level which managers perceive their firm to be proactive.

Risk taking

Risk taking has a mean of 4.0 and a standard deviation of 1.0. In the spread 4.0 of the respondents perceive their firms to be risk taking, and 1.0 of the data in the spread cannot be accounted for.

Summary

From the analysis of EO using reliability scales and distributions the conclusion that junior mining firms have a positive perception towards entrepreneurial orientation, and as such one can deduce that they are entrepreneurial. According to research on EO, entrepreneurial firms differ from firms that do not have an entrepreneurial orientation, with those that do manifesting characteristics such innovation, risk taking and proactiveness. Additionally such firms engage in entrepreneurship strategies such as corporate venturing, which create new businesses or strategic entrepreneurship which is strategic renewal and positioning of an organization. Based on these results and previous research, it is expected that these firms will engage corporate entrepreneurship strategies to gain competitive advantage.

Furthermore, researchers maintain that EO is used as a cushion during high levels of uncertainty such as laws, policies and other forms of obstacles that water down risk taking initiatives. During highly chaotic environments risk minimizing strategies become limited, as has been the case in the South African mining industry as a result of the Marikana massacre and industrial action that crippled the industry leading to employees losing their jobs. It is firms that have an EO that make it through such uncertain environments. Junior mining companies have to be more enterprising in this regard as they are hit harder than the bigger mining houses because when Moody's downgrades South Africa on the investment front and investors shun the South African mining industry due to the strikes, smaller mining companies suffer more when production comes to a halt, when costs rise and laws remain uncertain. One of the ways to survive these environments is to be entrepreneurial.

5.3.4 Inter-correlation of scales

5.4 Results pertaining to sub-problem 2

5.4.1 Reliabilities

To test for internal reliability Chronbach's alpha and inter-correlation items were used. Cronbach's alpha tests for internal consistency by measuring the degree to which instrument items are homogeneous and reflect the same underlying construct. Analysis had two stages, first analysis of the original scales, then the revised scale. The acceptable minimum measure for any scale for reliability is 0.6 using cronbach's alpha.

Analysis of reliabilities for sub-problem 2, corporate entrepreneurship, started by analyzing corporate venturing, its measures being: internal corporate venturing, cooperative corporate venturing and external corporate venturing. It was then followed by strategic entrepreneurship, its measures being: strategic renewal, organizational rejuvenation and business model renewal.

5.4.1.1 Corporate venturing

Internal corporate venturing

Internal corporate venturing had an original scale of three items. The items produced an alpha of 0.91 with an average inter-item correlation of 0.79. This according to cronbach's alpha coefficient can be accepted as reliable according to Hair et al (2011). The scales were not revised as with the entrepreneurial orientation construct.

Cooperative corporate venturing

Cooperative corporate venturing had a scale of three original items that produced an alpha of 0.93 with an average inter-correlation item of 0.82. According to cronbach's alpha this is beyond the minimum required measure of internal reliability of 0.6. and therefore can be accepted.

External corporate venturing

External corporate venturing also had a scale with three original items which were not revised. The scale produced an alpha of 0.93 and an average inter-correlation item of 0.82. From this the conclusion that the scales have internal reliability can be drawn.

5.4.1.2 Strategic entrepreneurship

Organisational renewal

Organisational renewal had a scale with three original items which were a not revised. The scale produced an alpha of 0.94, with an average inter-item correlation of 0.84.

Organisational rejuvenation

Organisational rejuvenation had a scale with three original items which were a not revised. The scale produced an alpha of 0.9, with an average inter-item correlation of 0.73.

Business model reconstruction

Business model reconstruction had a scale with three original items which were a not revised. The scale produced an alpha of 0.9, with an average inter-item correlation of 0.72.

5.4.2 Distributions of scales

Discussion of distributions corporate entrepreneurship will start by discussing distribution for corporate venturing with its measures, internal corporate venturing, cooperative corporate venturing and external corporate venturing. It will then be followed by discussion of strategic entrepreneurship with its measures, organizational renewal, organizational rejuvenation and business model reconstruction.

5.4.2.1 Corporate venturing

Internal corporate venturing

Internal corporate venturing had an original scale of three items. The items produced an alpha of 0.91 with an average inter-item correlation of 0.79. This according to cronbach's alpha coefficient can be accepted as reliable. The scales were not revised as with the entrepreneurial orientation construct.

Cooperative corporate venturing

Cooperative corporate venturing had a scale of three original items that produced an alpha of 0.93 with an average inter-correlation item of 0.82.

External corporate venturing

External corporate venturing also had a scale with three original items which were not revised. The scale produced an alpha of 0.93 and an average inter-correlation item of 0.82. From this the conclusion that the scales have internal reliability can be drawn.

5.4.2.2 Strategic entrepreneurship

Organisational renewal

Organisational renewal had a scale with three original items which were a not revised. The scale produced an alpha of 0.94, with an average inter-item correlation of 0.84. This scale is above the required minimum measure of internal reliability, therefore making its internal consistency accurate.

Organisational rejuvenation

Organisational rejuvenation had a scale with three original items which were a not revised. The scale produced an alpha of 0.9, with an average inter-item correlation of 0.73.

Business model reconstruction

Business model reconstruction had a scale with three original items which were a not revised. The scale produced an alpha of 0.9, with an average inter-item correlation of 0.72.

5.4.3 Distributions

Discussion on distributions of corporate entrepreneurship will start with distributions for corporate venturing and will be followed by strategic entrepreneurship.

5.4.3.1 Corporate venturing

Internal corporate venturing

The histogram of internal corporate venturing indicates that the distribution deviates from the normal distribution. The measure that deviates most is the Kurtosis that represents that peakedness or flatness of the distribution. The fifth bar of the distribution peaks above the normal distribution as shown by the superimposed normal curve. This indicates that the organisations engage in internal corporate venturing initiatives. The distributions skewed to the left, a positive skew, indicating that the respondents are likely to think of their organisation does not engage in internal corporate venturing activities.

Cooperative corporate venturing

The histogram of cooperative corporate venturing indicates that the distribution deviates from the normal distribution. The measure that deviates most is the Kurtosis that represents that peakedness or flatness of the distribution. The fourth bar of the distribution peaks above the normal distribution as shown by the superimposed normal curve. This indicates that the organisations engage in cooperative corporate venturing. The distributions show no favorable skewness either to the right or the left tail. While the left is characterized by shortage of observations, it also has a bar that peaks above the normal distribution line.

5.4.3.2 Strategic entrepreneurship

Strategic renewal

The histogram of strategic renewal differs from the other distributions by kurtosis, representing the flatness of the distribution. The values indicate that the distribution is flatter than expected. This can be seen by how the distributions fall below the

superimposed normal curve. This indicates that although it was expected that strategic renewal activities would be utilized by firms, they are not utilized as expected. The distribution shows no appreciable skewness to one side or the other.

Organisational rejuvenation

The histogram of organisational rejuvenation indicates that the distribution deviates from the normal distribution. The measure that deviates most is the Kurtosis that represents that peakedness or flatness of the distribution. The fifth bar of the distribution peaks above the normal distribution as shown by the superimposed normal curve, showing an abnormality. This indicates that the organisations engage in organisational rejuvenation initiatives. The distributions show no favorable skewness either to the right or the left tail.

Business model reconstruction

The histogram of business model reconstruction indicates that the distribution deviates from the normal distribution. The measure that deviates most is the Kurtosis that represents that peakedness or flatness of the distribution. The fourth bar of the distribution peaks above the normal distribution as shown by the superimposed normal curve. This indicates that the organisations engage in business model reconstruction. The distributions show no favorable skewness either to the right or the left tail. The right is characterized by shortage of observations.

5.4.4 Descriptive statistics

Correlation coefficients indicate the strength of a linear association between two metric variables, with + or - indicating the direction of the relationship. +1 indicates a perfect positive relationship, 0 indicating no relationship and -1 indicating a perfect negative relationship.

5.4.4.1 Corporate venturing

Internal corporate venturing

Internal corporate venturing has a mean of 4.3 and a standard deviation of 1.5. While other respondents may be below the mean and others above, 4.3 of them consider their firm to engage in internal corporate venturing activities. 1.5 of the data cannot be

accounted for, but that number is below the required 2/3 that should be accounted for by the spread, confirming that firms do engage in internal corporate venturing activities.

Cooperative corporate venturing

Cooperative corporate venturing has a mean of 4.3 and a standard deviation of 1.5. While other respondents may be below the mean and others above, 4.3 of them consider their firm to engage in cooperative corporate venturing activities. 1.5 of the data cannot be accounted for, but that number is below the required 2/3 that should be accounted for by the spread, confirming that firms do engage in cooperative corporate venturing activities.

External corporate venturing

External corporate venturing has the lowest mean, with a mean of 3.8 and a standard deviation of 1.4. An average of 3.8 managers perceives their firm to engage in external corporate venturing activities. More than 2/3 of the data is accounted for in the spread and 1.5 cannot be accounted for, showing the level to which managers perceive their firms to engage in external corporate venturing activities.

5.4.4.2 Strategic entrepreneurship

Strategic renewal

Strategic renewal has a mean of 4.6 and a standard deviation of 1.3. The mean is higher than means of other variables, an indication of the extent strategic renewal activities are being engaged by mining firms. 1.3 of the data cannot be accounted for in the spread, but more than two thirds of the data is accounted for, showing the extent to which strategic renewal initiatives are being engaged.

Organisational rejuvenation

Organisational rejuvenation has second highest mean, with a mean of 4.6 as well and a standard deviation of 1.3. This means that organizational rejuvenation together with strategic renewal initiatives that mining firms engage in more compared to the other variables. 1.3 of the data cannot be accounted for but more than 2/3 of the data in the spread is as expected.

Business model reconstruction

Business model reconstruction has a mean of 4.3, with a standard deviation of 1.2. Business model reconstruction is also significantly used by mining firms to reduce risk and gain competitive advantage. 1.2 of the data in the spread cannot be accounted for but more than 2/3 of the data in the spread is as expected.

5.4.4.3 Inter-correlations of scales

Multicollinearity was used to assess the degree of interrelatedness from both overall and individual variable perspective. This interrelatedness is to see the relatedness of corporate entrepreneurship strategies. This was done through the measure of sampling adequacy.

Corporate venturing

Internal corporate venturing is perfectly predicted without error by other variables as seen with the numerical number one. Cooperative corporate venturing is highly significant with a p value of .0001. It sits at 0.70 on its own, with cooperative corporate venturing its sits at 1 meaning that it is predicted by internal corporate venturing. External corporate venturing is predicted by internal corporate venturing and cooperative corporate venturing.

Strategic entrepreneurship

Strategic renewal with a value of one is predicted by corporate venturing. Organisational rejuvenation, also highly significant with a p-value of 0.001 is predicted by corporate venturing and strategic renewal activities. Business model reconstructions with also a p-value of 1 is predicted by corporate venturing and by organisational renewal and organizational rejuvenation activities.

5.4.5 Clusters of corporate entrepreneurship strategies

Post running the distributions, histograms and descriptive analysis, cluster analysis was run combining corporate entrepreneurship variables to help with how the variables identify with each other.

- Cluster one has 29 observations and is characterised by relatively low means, 0.4, with external corporate venturing falling below 0.4. The means rise marginally to 0.5 for strategic entrepreneurship, organisational rejuvenation and business model reconstruction. This cluster represents firms characterised by low perception of entrepreneurial orientation and its value in the mining industry. As such their scores on the corporate entrepreneurship strategies are subsequently low.
- Cluster two has 18 observations and is distinguished by relatively higher means on all the variables, also dropping at external corporate venturing to below 0.7, rising again for strategic entrepreneurship and organisational rejuvenation to just below 0.8, and dropping again on business model reconstruction to below 0.7. This cluster represents firms characterized by high perceptions of entrepreneurial orientation and its value in the mining industry. Thus their scores on the use of corporate entrepreneurship strategies are subsequently high.

5.5 Relationship between EO and corporate entrepreneurship strategies

Entrepreneurial Orientation

Innovativeness

Innovativeness is highly significant relationally with internal corporate venturing with a p-value of 0.001, with an index of MSA at 0.71. It has a mediocre score of 0.46 with cooperative corporate venturing, with a p-value of 0.01. In relation to external corporate venturing the relationship is worse than that of cooperative corporate venturing with a score of 0.31, with a p-value of 0.05.

Innovativeness has marginal relational significance with strategic renewal, with an index of 0.38 and p-value of 0.01. It has significant relations with organizational rejuvenation with an index of 0.50 and p-value of 0.001. It also has high significance with business model reconstruction with an index of 0.57 and p-value of 0.001.

Proactiveness

Proactiveness is highly significant with internal corporate venturing, with a p-value of 0.001, with an index of 0.68. In relation to cooperative corporate venturing it has a mediocre index of 0.51 but with a p-value of 0.001, meaning that the two variables are related. In relation to external corporate venturing it has a poor index of 0.33 with a p-value of 0.05

Proactiveness has moderately low significance with strategic renewal initiatives with a p-value of 0.01 and index score of 0.43. Compared to organizational rejuvenation and business model reconstruction, it has scores that are fairly low with index figures of 0.36 and 0.42, with p-values of 0.05 and 0.01 subsequently.

Risk taking

Risk taking has a significant relationship with risk taking, with an index of 0.57 and p-value of 0.001. There is a poor relationship with cooperative corporate venturing and external corporate venturing with index scores of .28, with no p-values.

Risk taking is highly significant with strategic renewal initiatives with index score of 0.57 and p-value of 0.001. It is marginally significant in relation to organizational rejuvenation with an index score of 0.45 and p-value of 0.01. With business models reconstruction it is also marginally significant with an index score of 0.40 and p-value of 0.01.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions of the study

The purpose of this study was to determine the perceived value EO and the corporate entrepreneurship strategies that mining companies use to gain competitive advantage. The manner in which this was done was by running reliability scales, distributions scales, descriptive statistics and intercorrelations scales. The third step was to measure the relationship EO has in relation to corporate entrepreneurship strategies. The results were that a portion of the respondents perceived their organizations to be

entrepreneurial while others had a somewhat low positive perception of entrepreneurial orientation of their firm. Distributions and descriptive statistics showed a favorable perception of entrepreneurial orientation, with respondents having means of 4 in the histograms.

Relating EO to corporate entrepreneurship strategies the results indicate that EO is related corporate entrepreneurship, and that those firms that have a positive perception of entrepreneurial orientation, they will also engage and utilize corporate entrepreneurship strategies, or will be high in their measure of corporate entrepreneurship activities.

6.2 Recommendations

The process of gathering data was a cumbersome process, especially with the unrest that took place in the mining industry of South Africa. Researchers are advised to start their research in time and to factor glitches that may occur in the research process.

6.3 Suggestion for further research

The study failed to look at how EO and corporate entrepreneurship strategies impact on performance and subsequently on the bottom line of the company. Suggestion for further research is to measure the relationship between EO and entrepreneurship strategies and reported based on the research results.. Additionally, this study looked at junior mining companies in South Africa. Further research could be done on bigger mining houses or the study can be replicated in other African countries to compare to South Africa, especially that the ore body of South Africa is becoming sterilized thus forcing mining houses to be more enterprising.

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Appendices

Section A

Questionnaire

1. Entrepreneurial orientation

In the following scale items, the terms risk-taking, innovativeness, and proactiveness are used. As employed in these items, risk-taking refers to a *willingness to commit resources to projects, ideas, or processes whose outcomes are uncertain and for which the cost of failure would be high*. Innovativeness refers to a *the exhibition of experimentation, exploration, and creative acts as reflected in, for example, new process technologies, new methods of operation, and new business strategies*. Proactiveness refers to *engaging in forward-looking actions targeted at the exploitation of opportunity in anticipation of future circumstances, as would be typical of firms that lead and/or pre-empt the actions of others (e.g., market pioneers, early adopters of new technologies)*. Given these definitions, please indicate the extent to which you agree with the following statements. (All items rated on 7 point, Likert-type scales ranging from “Strongly disagree” [=1] to “Strongly agree” [=7].) (Covin and Wales 2011; 694).

1.1 Innovativeness items

In general, the top managers of my firm favour a strong emphasis on the marketing of tried-and-true procedures and processes

1 2 3 4 5 6 7

A strong emphasis on R&D, technological leadership, and Innovations

1 2 3 4 5 6 7

How many new processes and procedures has your firm adopted in the past five years (or since its establishment)?

No new lines of processes and procedures

1 2 3 4 5 6 7

Very many new lines of processes and procedures

1 2 3 4 5 6 7

Changes in processes and procedures have been mostly of a minor nature

1 2 3 4 5 6 7

Changes in processes and procedures have usually been quite dramatic

1 2 3 4 5 6 7

1.2 Proactiveness items

In dealing with its competitors, my firm . . .

Typically responds to actions which competitors initiate

1 2 3 4 5 6 7

Typically initiates actions to which competitors then respond

1 2 3 4 5 6 7

Is very seldom the first business to introduce administrative techniques, operating technologies, etc.

1 2 3 4 5 6 7

Is very often the first business to introduce new administrative techniques, operating technologies, etc.

1 2 3 4 5 6 7

Typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture

1 2 3 4 5 6 7

Typically adopts a very competitive, "undo-the-competitors" posture

1 2 3 4 5 6 7

1.3 Risk-taking items

In general, the top managers of my firm have . . .

A strong proclivity for low-risk projects (with normal and certain rates of return)

1 2 3 4 5 6 7

A strong proclivity for high-risk projects (with chances of very high returns)

1 2 3 4 5 6 7

In general, the top managers of my firm believe that . . .

Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior

1 2 3 4 5 6 7

Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives

1 2 3 4 5 6 7

When confronted with decision-making situations involving uncertainty, my firm . . .

Typically adopts a cautious, "wait-and-see" posture in order to minimize the probability of making costly decisions

1 2 3 4 5 6 7

Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities

1 2 3 4 5 6 7

2. CORPORATE ENTREPRENEURSHIP

2.1 CORPORATE VENTURING

Corporate venturing entails various methods for adding, creating or investing in a new business. Corporate venturing - new businesses are created and owned by the company; these may reside within the company or may be outside. Internal corporate venturing: new businesses are created and owned by the company. Cooperative corporate venturing: also known as collaborative corporate venturing refers to created businesses that are owned in a joint partnership with an external partner. External corporate venturing: refers to businesses that are created by other parties that the business invests in.

Given these definitions, please indicate the extent to which you agree with the following statements. (All items rated on 7-point, Likert-type scales ranging from "Strongly disagree" [=1] to "Strongly agree" [=7])

2.1.1 Internal corporate venturing

- My firm exhibits high levels of internal corporate venturing
- My firm currently manifest internal corporate venturing initiatives

- In general, my firm is on the cutting edge when it comes to internal corporate venture initiatives

2.1.2 Cooperative corporate venturing

- My firm exhibits high levels of cooperative corporate venturing
- My firm currently manifest cooperative corporate venturing initiatives
- In general, my firm is on the cutting edge when it comes to cooperative corporate venturing initiatives

2.1.3 External corporate venturing

- My firm exhibits high levels of external corporate venturing
- My firm currently manifest external corporate venturing initiatives
- In general, my firm is on the cutting edge when it comes to external corporate venturing initiatives

3. STRATEGIC ENTREPRENEURSHIP

Strategic entrepreneurship involves entrepreneurship initiatives that go beyond creation of new businesses; it involves innovations that are adopted in the pursuit of competitive advantage. It can take the following forms which are; strategic renewal i adoption of new strategy. Organisational rejuvenation i internally focused innovation aimed at improving strategy, and business model reconstruction i redesign of a business model. Given these definitions, please indicate the extent to which you agree with the following statements. (All items rated on 7-point, Likert-type scales ranging from "Strongly disagree" [=1] to "Strongly agree" [=7])

3.1 Strategic renewal

- My firm exhibits high levels of strategic renewal
- My firm currently manifest strategic renewal initiatives

- In general, my firm is on the cutting edge when it comes to strategic renewal initiatives

3.2 Organisational rejuvenation

- My firm exhibits high levels of organisational rejuvenation
- My firm currently manifest organisational rejuvenation initiatives
- In general, my firm is on the cutting edge when it comes to organisational rejuvenation initiatives

3.3 Business model reconstruction

- My firm exhibits high levels of business model reconstruction
- My firm currently manifest business model reconstruction initiatives
- In general, my firm is on the cutting edge when it comes to business model reconstruction initiatives

APPENDIX B

Sub-problem	Literature review	Hypothesis	Source data	Type of data
How do mining companies perceive the value of entrepreneurship?	Urban and Oosthuizen (2009) PWC mining review 2012	Hypothesis 1: Mining companies have a negative perception of intrapreneurship.	Question 6-11	Interval Ordinal
What are the forms of entrepreneurial strategies that are employed by mining companies in volatile environments?	Kuratko, Ireland and Hornsby (2001) Schindehutte, Morris, and Kuratko (2000) Tracey and Philips (2010)	Hypothesis 2: Corporate entrepreneurship strategies are positively linked with performance of a firm in the mining industry.	Questions 12 ï 16	Interval Ordinal

