

**Gordon Institute
of Business Science**
University of Pretoria

**Investigating the impact of entrepreneurial orientation on the
performance of government funded incubators
in South Africa**

Patricia Chibaya

16391773

A research project submitted to Gordon Institute of Business Science,
University of Pretoria,
in partial fulfilment of the requirements for the degree of
Master of Business Administration

6 November 2017

Abstract

The link between high Entrepreneurial Orientation (EO) and Performance is well-established. The objective of incubators is to drive entrepreneurship through supporting start-up businesses. The incubator manager is a key input in the process; hence the importance of the EO of the incubator alongside the manager's EO.

Prior research on the role of EO has not focussed on its effect on incubation and how the EO abilities of the manager and the incubator contribute to the performance of incubatees' business during and post incubation in terms of improving the survival rate. The main aim of this research was to investigate the impact of EO both at individual and incubator level on the performance of incubators. EO can be defined as the strategic orientation or strategic posture that results in the creation of new businesses. The EO construct comprises of five components i.e. – (i) autonomy, (ii) innovativeness, (iii) risk taking, (iv) proactiveness, and (v) competitive aggressiveness.

A quantitative study was carried out which used a questionnaire to determine the EO abilities of both managers and incubators as well as performance measures. The population of the study comprised 57 government funded incubator managers and a response rate of 53% was realised. The results indicated weak insignificant correlations at 1% level of significance for the majority of the EO components.

Although EO abilities are cited as critical for performance, high EO may not necessarily improve performance in the incubator sector. Environmental context as well as incubator internal processes also play a huge part in driving performance. Certain components of the EO construct may need to be emphasised in the incubation model in order for it to be more effective.

Keywords

Entrepreneurial orientation, government funded incubators, incubation

Declaration

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

Name: Patricia Chibaya

Signature:

Date: 6 November 2017

Contents

Abstract	i
Declaration	ii
Contents	iii
List of Figures	vii
List of Tables	vii
Acronyms.....	ix
CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM	1
1.1.Introduction to the research problem	1
1.2 Research motivation	3
1.3 Research problem	4
1.4 Research objectives	4
1.5 Research scope.....	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 Introduction.....	6
2.2 General theory of Entrepreneurship theory.....	6
2.2.1 Social Entrepreneurship.....	8
2.2.2 Emergence of EO Theory.....	8
2.2.3 EO level of analysis.....	9
2.2.4 Evolution of EO	10
2.2.5 Dimensions of EO	10
2.2.6 EO effect on performance	13
2.2.7 Covariance of EO constructs.....	14
2.3 The role of a manager as a key player in EO.....	14
2.4 The business incubator.....	16
2.5 The elements of the incubator process model	16
2.6 South African Government-funded business Incubators	17
2.7 Performance of Government-funded Incubators	18
2.8 Conclusion.....	21

CHAPTER 3: RESEARCH QUESTIONS.....	22
3.1 Introduction.....	22
3.2 Research Question 1.....	22
3.3 Research Question 2.....	22
CHAPTER 4: RESEARCH METHODOLOGY	23
4.1 Research design – Purpose and scope	23
4.2 Motivation for the research design.....	23
4.3 Unit of analysis	25
4.4 Population	25
4.5 Sampling method and size	25
4.6 Research instrument	26
4.6.1 The questionnaire	26
4.7 Validity.....	27
4.7.1 Face validity.....	27
4.7.2 Content validity	28
4.7.3 Criterion validity.....	28
4.7.4 Construct validity.....	28
4.8 Reliability.....	28
4.9 Bias	28
4.10 Data collection.....	29
4.11 Experimental design and data description	29
4.12 Data analysis.....	30
4.13 Research assumptions and limitations.....	31
4.13.1 Assumptions	31
4.13.2 Limitations.....	31
4.14 Summary	31
CHAPTER 5: RESULTS.....	33
5.1 Introduction.....	33
5.2 Survey response rate.....	33
5.3 Respondent demographics which are characteristic of the population	34
5.4 Construct validity-state dependent and independent variable	37
5.5 Instrument reliability results	37
5.5.1 Self-risk-taking reliability statistics	37
5.5.2 Self-innovativeness reliability statistics.....	38

5.5.3 Self-proactive reliability statistics	39
5.5.4 Self-autonomy reliability statistics	40
5.5.5 Incubator risk taking reliability statistics	41
5.5.6 Incubator innovativeness reliability statistics	42
5.5.7 Incubator proactive reliability statistics	43
5.5.8 Incubator aggressiveness reliability statistics	44
5.5.9 Incubator autonomy reliability statistics	44
5.6 Descriptive statistics for observable variables and constructs	45
5.6.1 Self-risk-taking scores	45
5.6.2 Self-innovation scores	46
5.6.3 Self-proactive scores	47
5.6.4 Self-autonomy scores	48
5.7 EO constructs at incubator level	48
5.7.1 Perceived risk-taking of government funded incubator	48
5.7.2 Perceived innovativeness of government funded incubator	49
5.7.3 Perceived proactiveness of government funded incubator	50
5.7.4 Perceived aggressiveness of government funded incubator	51
5.7.5 Perceived autonomy of government funded incubator	51
5.8 Comparing mean scores across subgroups	52
5.8.1 Comparing scores by gender	52
5.8.2 Comparing scores by age groups	53
5.8.3 Comparing scores by industry	55
5.8.4 Comparing scores by years by experience	58
5.8.5 Comparing scores by level of education	59
5.8.6 Comparing scores by accolades	62
5.8.7 Comparing scores by how many graduates continued to exist after incubation ...	64
5.9 Relationship between the scores for the individual entrepreneurial orientation constructs	66
5.10 Relationship between the scores for the incubator entrepreneurial orientation constructs	68
5.11 Relationships between the constructs	70
5.12 Summary of Relationships	74
CHAPTER 6: DISCUSSION OF RESULTS	75
6.1 Introduction	75
6.2 Impact of Managers' Demographics on EO	75

6.3 Demographics – Government funded incubator.....	76
6.3.1 Risk taking	78
6.3.2 Innovativeness	79
6.3.3 Proactiveness	79
6.3.4 Autonomy.....	80
6.3.5 Incubator aggressiveness	80
6.4 Discussion.....	81
6.5 Conclusion.....	84
CHAPTER 7: CONCLUSION	85
7.1 Introduction.....	85
7.2 Review of research.....	85
7.3 Research findings.....	85
7.4 Recommendations for Future Research	88
7.5 Concluding remarks.....	89
References	90
Annexures	95
Annexure A	95

List of Figures

Figure 1: Summary of hypothesis.....	5
Figure 2: Overview of literature review	6
Figure 3: Organisational structure of SEDA and STP	18
Figure 4: Hard and soft measures (adapted from Jones et al., 2006).....	20
Figure 5: Performance as byproduct of incubator goal	21
Figure 7: Incubator Sectors.....	34
Figure 8: Percentage of respondents based on gender.....	35
Figure 9: Percentage of respondents based on age.....	35
Figure 10: Percentage of respondents based on qualification	36
Figure 11: Percentage of respondents based on managerial experience	36
Figure 12: Analysis of respondents per sector	77
Figure 13: Government Incubator Performance Model.....	87

List of Tables

Table 1: Incubator models (Grimaldi & Grandi, 2005)	17
Table 2: Reversed questions	30
Table 3: Summary of Research Methodology	32
Table 4: Cronbach alpha for self-risk-taking reliability statistics.....	37
Table 5: Self-risk-taking reliability statistics	38
Table 6: Cronbach alpha (1) for self-innovativeness reliability statistics	38
Table 7: Cronbach alpha (2) for self-innovativeness reliability statistics	38
Table 8: Self-innovativeness reliability statistics.....	39
Table 9: Cronbach alpha for self-proactive reliability statistics	39
Table 10: Self-proactive reliability statistics.....	40
Table 11: Cronbach Alpha for self-autonomy reliability statistics	40
Table 12: Self-autonomy reliability statistics.....	40
Table 13: Cronbach Alpha for incubator risk taking reliability statistics.....	41
Table 14: Incubator risk taking reliability statistics.....	41
Table 15: Cronbach Alpha for incubator innovativeness reliability statistics	42
Table 16: Incubator innovativeness reliability statistics	42
Table 17: Cronbach Alpha for Incubator proactive reliability statistics	43
Table 18: Incubator proactive reliability statistics	43
Table 19: Cronbach Alpha for incubator aggressiveness reliability statistics	44
Table 20: Incubator aggressiveness reliability statistics	44
Table 21: Cronbach Alpha for incubator autonomy reliability statistics	44
Table 22: Incubator autonomy reliability statistics	45
Table 23: Descriptive statistics for self-risk-taking.....	46

Table 24: Descriptive statistics for self-innovation.....	47
Table 25: Descriptive statistics for self-proactive scores	48
Table 26: Descriptive statistics for self-autonomy scores	48
Table 27: Descriptive statistics for perceived risk-taking of government funded incubator	49
Table 28: Descriptive statistics for perceived innovativeness of government funded incubator.....	50
Table 29: Descriptive statistics for perceived proactiveness of government funded incubator.....	50
Table 30: Descriptive statistics for perceived aggressiveness of government funded incubator.....	51
Table 31: Descriptive statistics for perceived autonomy of government funded incubator	51
Table 32: Gender group descriptive statistics.....	52
Table 33: ANOVA for gender groups	53
Table 34: Age group descriptive statistics	54
Table 35: ANOVA for age groups.....	55
Table 36: Descriptive statistics for industry	56
Table 37: Descriptive statistics for comparing scores by experience.....	58
Table 38: ANOVA for comparing scores by experience	59
Table 39: Descriptive statistics for level of education	60
Table 40: ANOVA for level of education.....	61
Table 41: Descriptive statistics for accolades.....	62
Table 42: ANOVA for accolades	63
Table 43: Descriptive statistics for how many graduates continued to exist after incubation	64
Table 44: ANOVA for how many graduates continued to exist after incubation.....	65
Table 45: Correlations between the scores for the individual entrepreneurial orientation constructs	67
Table 46: Correlations between the scores for the incubator entrepreneurial orientation constructs	69
Table 47: Correlations between the constructs	70
Table 48: Correlation for Hypothesis 1	72
Table 49: Correlations for Hypothesis 2	73
Table 50: Summary of Relationships	74

Acronyms

SEDA	Small Enterprise Development Agency
DSBD	Department of Small Businesses Development
SME	Small and Medium Enterprises
EO	Entrepreneurial Orientation
UBI	University business incubators
SMMEs	Small, Medium and Micro Enterprises

CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM

1.1. Introduction to the research problem

The link between Entrepreneurial Orientation and Performance has been established by a number of previous studies (Rauch, Wiklund, Lumpkin, & Frese, 2009). In general, high EO abilities are associated with improved results for entrepreneurial firms (Kollmann & Stöckmann, 2014). Organisations with a high entrepreneurial posture are more innovative and opportunistic, can push new products into the market and can therefore cause disruption and creation of new markets (Kraus, Rigtering, Hughes, & Hosman, 2012). The EO construct is comprised of five components namely (i) autonomy, (ii) innovativeness, (iii) risk taking, (iv) proactivity, and (v) aggressiveness.

EO is therefore an important sub-set of the entrepreneurship theory which in Africa is considered a means by which the African population can foster development and alleviate poverty (Devine & Kiggundu, 2016). It has fueled growth in several countries and has become a tool of driving growth of economies globally (Kraus et al., 2012). The researcher believes that enterprise development (the nurturing and building of Small, Medium and Micro Enterprises [SMMES]) is particularly key for addressing the three evils that face South Africa i.e. high unemployment rate, lack of sustainable economic growth and unequitable distribution of income. Various initiatives exist to promote innovation and entrepreneurial activities and incubators have been increasingly given attention in developed countries as a platform to facilitate enterprise development (Prochazkova, 2015). Several research papers offer a variety of definitions for incubators which assists in identifying central components of the concept. Baraldi and Havensvid (2016) define incubators as organisations that provide start-up entrepreneurs with shared working spaces, and various support systems such as networks and services.

Various incubator models exist working at the technological level or with management support, or as generalist and specialist incubators (Baraldi & Havensvid, 2016). Five main types have been identified: (i) business innovation centres; (ii) incubators set up in universities; (iii) independent private incubators; (iv) corporate private incubators; and (v) government funded incubators. Accelerators are also seen as an innovative and enhanced model of incubation. They are generally similar to traditional incubators but work only for a limited time (approximately three months) (Cohen & Hochberg, 2014). This is unlike traditional models which run on average for three years (Pauwels, Clarysse, Wright, & Van Hove, 2016).

Incubators also differ with regard to control or governance which affects the goals or objectives of the incubator. Differences include whether incubators are profit making or nonprofit making as well private, public or mixed (Baraldi & Havenvind, 2016). In South Africa, the majority of business incubators are funded by the government through the Small Enterprise Development Agency (SEDA) which operates under the newly created Department of Small Businesses Development (DSBD) and the remaining few are privately funded (Masutha & Rogerson, 2015). The term 'government funded incubators' therefore refers to incubators that are wholly or significantly funded by the government at both national and local government level. Regardless of the huge funding channeled towards incubation by the government, significant differences were noted between the activities of government funded incubators as opposed to independent private incubators. The results of a case study comparing government incubators to independent private incubators showed that dropout rates are higher under government led incubators (Masutha & Rogerson, 2014). This was attributed to the different objectives of the incubator organisations. Whilst government led incubators aim to drive transformation goals by reducing inequality, private organisations aim to create assets of value (Masutha & Rogerson, 2014).

In a study of the success rates of government-funded business incubators in South Africa, several factors were found to influence the performance of a business incubator: the caliber of entrepreneurs and management, quality of networks and advisory as well as supportive structures and policies of government, amongst other factors (Buys & Mbewana, 2007).

The competency of management was found to be key in the management of incubators and has been noted to be a success factor (Lewis, 2001). Manager skills are critical during incubation as they are part of the inputs which are processed to bring out stronger start-up companies. Incubator manager characteristics include: (i) a diverse skill set; (ii) good problem-solving skills with an ability to prioritise and expedite action; (iii) a passion for detail coupled with an ability to multitask; and being (iv) a team player with good knowledge of the community. However, these appear to be traditional manager attributes. Lumpkin and Dess (1996) argued that entrepreneurial managers are important to the growth of firms as they provide vision and imagination necessary for identifying opportunities. Therefore, the researcher is of the view that managers of incubators should go beyond being traditional managers to being entrepreneurial managers. The entrepreneurial intensity of managers is measured by entrepreneurial orientation.

This study aimed to analyse the impact of an entrepreneurial orientation of government funded incubator managers in South Africa and to recommend a management model for government funded incubators. The aim was to improve effectiveness of incubation through management with a high entrepreneurial orientation.

1.2 Research motivation

The parallels drawn between EO and performance in other environments cannot be ignored in South Africa, particularly the government funded incubation sector. as due to Masutha and Rogerson (2015) indicated the need to improve the performance of incubators as a key driver of economic growth in the country. With reference to the Global Entrepreneurship's Monitor's (GEM) 2016 report, the new venture creation process is complex and thus requires policy intervention to coach support entrepreneurs through the process.

Incubators therefore aim to stimulate entrepreneurship and the government of South Africa has invested heavily in such programmes as a way of stimulating entrepreneurship to encourage growth as well as to address inequality issues (SEDA, 2016).

The role of EO in the incubation model can therefore not be underestimated as incubators provide a platform to develop entrepreneurs. Entrepreneurship behaviours which are measured by EO abilities are important in an organisation as they encourage creation of new ideas and the ability to adapt to changing environments (Renko, El Tarabishy, Carsrud, & Brännback, 2015). Entrepreneurial orientation is conceived as an organisational decision making position or strategic intent with an inclination to favour entrepreneurial activities (Covin & Wales, 2012). As defined earlier, business incubators promote the intentions of entrepreneurial orientation.

The researcher is of the view that EO abilities and postures of both incubator managers and the incubator houses themselves could have an impact on the performance of government funded incubators.. Previous research already suggests that entrepreneurial orientation profiles of Small and Medium Enterprises (SMEs) have an impact on the innovation and adaptability of SMEs (Avlonitis & Salavou, 2007). The researcher's interest was to establish the impact of the EO of both incubators and incubator managers in government funded incubators on performance.

1.3 Research problem

As previously stated, the South African government invests significant amounts towards the support of business incubation. In 2015/2016 financial year, the STP received R132 million through SEDA (SEDA, 2016). Despite huge funding from government, Buys and Mbewana, (2007) in a study on GODISA (a government incubation agency which was later incorporated into STP), established that not all government funded incubators are successful in South Africa. STP runs 57 incubation centres across the country in specific sectors (SEDA, 2017).

One of the key factors identified by Buys and Mbewana, (2007) was the competency of the management running the incubators. This view is supported by researchers in other countries. A study by Theodorakopoulos, Kakabadse and MCGowan (2014) in the United Kingdom also identified “the level and quality of management support” as a critical factor in the performance of business incubators. The researcher aimed to focus on the entrepreneurial orientation of managers as a variable which enables the competency of managers.

A positive relationship has already been established between the performances of SMEs and the entrepreneurial orientation of the related organisations under study (Kraus et al., 2012). However, literature does not cover the entrepreneurial orientation of business incubators and there seems to be an assumption that business incubators, due to their nature, have high levels of entrepreneurial orientation and the managers possess the required entrepreneurial intensity to drive the objectives of incubators. The mismatch of results between government and private funded incubators in South Africa, as established by Masutha and Rogerson (2015), could indicate varying levels of entrepreneurial orientation between the two types of incubator models dominant in South Africa.

1.4 Research objectives

This research paper’s main objectives were:

- To investigate the impact or effect of EO at the level of the manager and the level of the incubator itself on the performance of government funded incubators in South Africa.
- To determine the effect of EO at individual managers level and EO at incubator level to performance.

Accordingly, the aim of the research was to investigate the impact of entrepreneurial orientation (EO) at both the government incubator level and individual managers' level.

For this study performance is measured according to the following:

- Turnover growth;
- Job creation; and
- Sustainability of incubatees after graduation.

1.5 Research scope

The research scope covers head managers of government funded incubators who had access to the research questionnaire. Fifty-seven questionnaires were distributed to government funded incubators in South Africa spread across the country.

Figure 1 below explains the interactions between EO and performance and summarises the hypothesis.

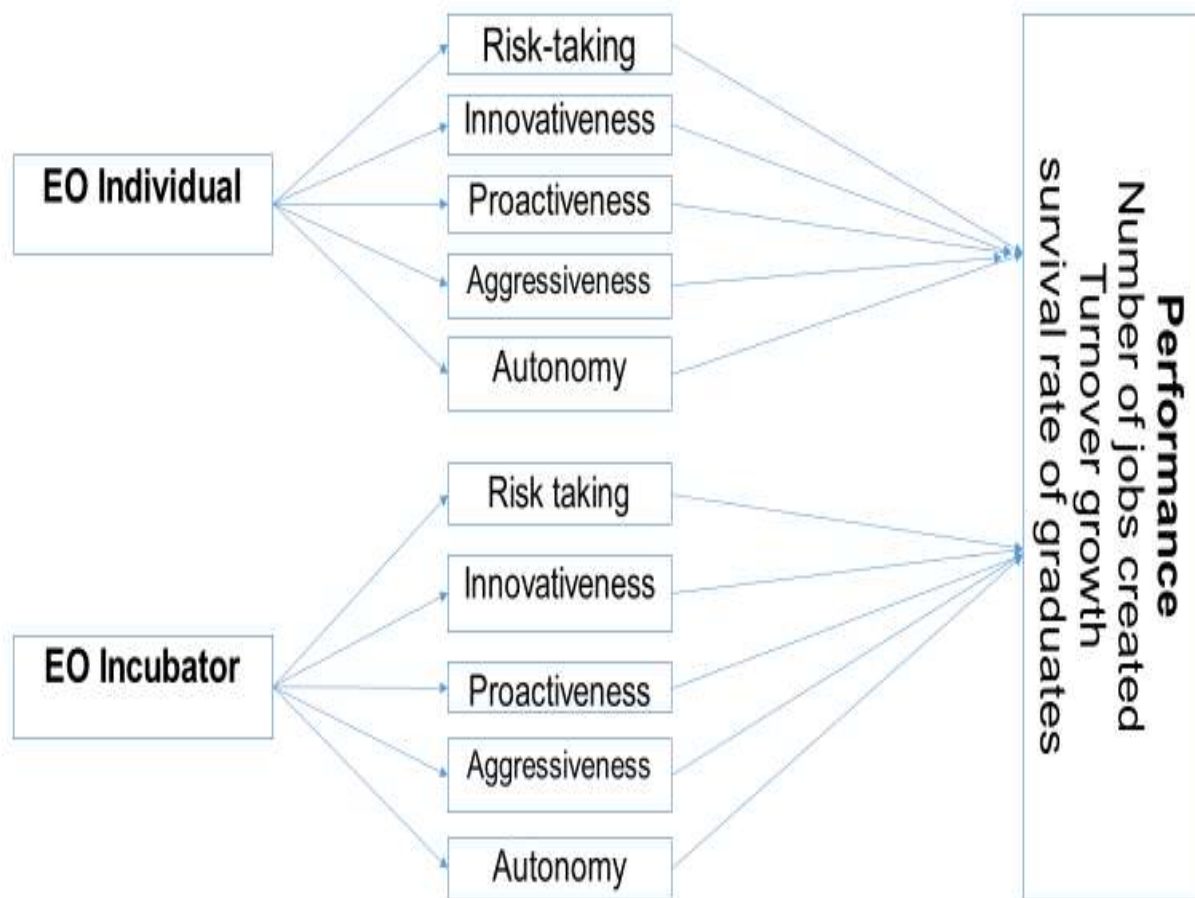


Figure 1: Summary of hypothesis

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter critically assesses the existing body of knowledge on this topic to enable the researcher to further validate the already existing literature (Creswell, 2012). The literature review discusses the main subjects of the research which are “entrepreneurial orientation”, “performance” and “business incubator”. The aim of the review is to identify gaps in literature that the researcher will endeavour to fill. The literature is presented in four main sections. The first section generally discusses Entrepreneurship theory as a foundation to incubator entrepreneurship orientation. The second section discusses the components of the entrepreneurial orientation construct and the multidimensional aspect of the construct. The third and fourth sections provide an understanding on the role of managers in the success of incubation as well as incubation models and government funded incubation in South Africa.

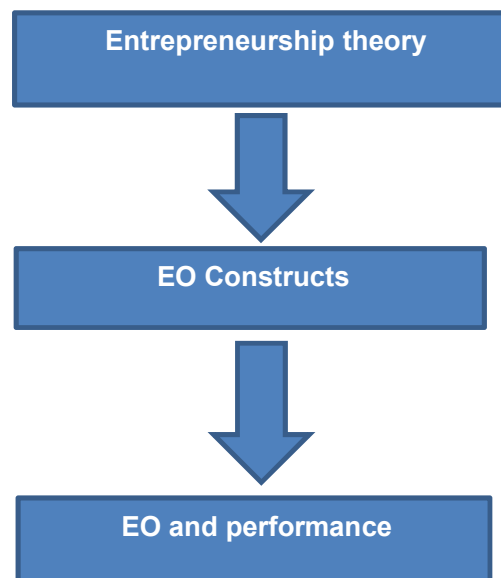


Figure 2: Overview of literature review

2.2 General theory of Entrepreneurship theory

Entrepreneurship is a term that has been used for many years. Researchers have very little consensus on the definition, however several common themes exist. Most definitions lean towards creating wealth, enterprises, innovation, change, value and

growth (Kraus et al., 2012). Carlsson et al. (2017) added the aspect of creating new opportunities and operating in uncertain conditions. One of the most cited definitions of entrepreneurship was proposed by Shane and Venkatraman, who defined entrepreneurship as a “scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited” (2000, p. 218).

Ma and Tan (2006) perceived entrepreneurship as the relentless pursuit of opportunities as well as resources. Entrepreneurship in the above definitions is connected with opportunities. In their paper, Shane and Venkatraman (2000) alluded to entrepreneurship as a way of thinking and a mind-set which encourages creativity and being unique. This mindset permeates all entrepreneurial activity be it in commerce, government or sport. This mindset therefore goes beyond the business arena. Jantunen (2005) proposed that entrepreneurship was about coping with market uncertainties and being able to take risks to do so. He also added a dimension to entrepreneurship which relates to introduction of new combinations of products and processes and distribution channels when facing the needs of the market. He further claimed that entrepreneurship is about an entrepreneurial attitude which fundamentally involves alertness to discoveries and the ability to seize opportunities.

The domain of entrepreneurship includes an explorative side as well as an exploitative side. The explorative side consists of the role and characteristics of individuals or organisations (Carlsson et al., 2017). The outcomes of the explorative entrepreneurship are recognition of opportunities, enterprise creation and innovation. Venture creation takes the form of creation of new companies or new activities in existing companies (Carlsson et al., 2013). Individual traits which accompany explorative entrepreneurship include:

- Risk taking;
- Proactiveness;
- Innovativeness;
- Aggressiveness; and
- Autonomy.

Typically, it can be argued that business incubators fall into both the explorative and exploitative domain as they seek to support identified entrepreneurs’ domain of the creation of viable businesses. The entrepreneurship theory in this sense provides a foundation for entrepreneurial orientation theory from the perspective of incubator houses and aims to find an intersection between the two theories.

2.2.1 Social Entrepreneurship

Entrepreneurial activities can be observed in non-profit organisations as well as government organisations. According to Verreynne, Miles and Harris (2012), social enterprises are opportunity seeking organisations that leverage social entrepreneurship in a bid to solve socially induced problems and generate social value. These organisations use commercial principles to create communal benefits to the society, either directly or indirectly. Entrepreneurship is considered to be a dynamic process with a vision based on change and positive development. This requires utilising an individual's intellectual and creative abilities to grow and apply innovative ideas and creative solutions (Frederick & Kuratko, 2004). Anderson, Kreiser, Kuratko, Hornsby and Eshima (2015) regarded entrepreneurship to be a critical component of economic development, although the study was done in the private sector context. The same concept can however be applied to government bodies and public organisations

Verreynne et al. (2012) suggested that entrepreneurship can be taught and can be applied in other organisations which are not profit making. It would be expected that the entrepreneurial orientation of both the incubator organisation and its managers be high so that they can effectively support incubatees. It would be interesting to investigate whether higher levels of entrepreneurial orientation impact the performance of incubators.

2.2.2 Emergence of EO Theory

By definition EO, is defined as the processes, practices, and decision-making activities and strategic orientation that result in new entry or new ventures (Jantunen, 2005). It comes out of a strategic-choice perspective which asserts that new opportunities can be effectively achieved through “purposeful enactment”. Therefore it involves the purpose, intents and activities of key players functioning in the dynamic process of new venture creation (Lumpkin & Dess, 1996). It is sometimes referred to as entrepreneurial strategic posture. The theory seeks to distinguish between entrepreneurial firms from those conservatively managed (Anderson et al., 2015). Kraus et al. (2012) further alluded that entrepreneurship orientation theory also refers to the strategic intention and direction and implementation of such strategies that lead to exploring new markets or pre-existing products.

The theory of EO is distinctly different from the theory of entrepreneurship in that the theory of entrepreneurship provides the content whilst EO provides the process i.e. the

methods, practices and decision making style managers use to act in an entrepreneurial manner (Lumpkin & Dess, 1996). EO is therefore the operationalisation of entrepreneurship theory.

2.2.3 EO level of analysis

The entrepreneurial orientation should permeate all levels of the organisation and be part of the organisational culture. as an organisational mind-set. Organisations are considered to have entrepreneurial orientation levels that range from low, medium to high (Covin & Wales, 2012). Entrepreneurship can be therefore be treated as a trait of an organisation. The formal or informal activities aimed at creating new businesses in established companies through product and process innovations and market development are called corporate entrepreneurship (Kusa, 2016). The entrepreneurship process does not end when the company is set up but continues within the organisation. Organisations vary with respect to their entrepreneurial intensity which is referred to as the EO of an organisation.

As seen above although the EO constructs have been studied mostly at corporate level (Domke-Damonte, Faulstich, & Woodson, 2008) argue that the key dimensions that characterise EO include a propensity to act autonomously, a willingness to innovate and take risks hence the importance of studying EO at individual level as these characteristics emanate from deep within individuals. Understanding EO at the individual level could also be valuable to future business owners, to business incubators and to potential investors who are considering supporting business proposals (Bolton & Lane, 2012). (Lumpkin & Dess, 1996) further places emphasis on the importance of defining the level of analysing EO as early writers thought it to be the purview of individuals only whilst other writers only analysed it for small businesses.

For the purpose of this study the study intends to determine the impact EO has on government funded incubators by analysing EO at both levels of analysis i.e. incubator level and individual managers level. The researcher proposes that the higher the EO at manager's level and at incubator level the better the support offered to incubated businesses.

2.2.4 Evolution of EO

Over the years, entrepreneurship scholars have developed various typologies to determine alternate perspectives of entrepreneurship (Lumpkin & Dess, 1996). EO has become a central concept in the domain of entrepreneurship that has received a substantial amount of theoretical and empirical attention (Covin, Green, & Slevin, 2006). More than 100 studies of EO have been conducted, which has led to wide acceptance of the conceptual meaning and relevance of the concept.

2.2.5 Dimensions of EO

As previously defined, entrepreneurial orientation (EO) refers to the processes, practices, and decision-making activities used by entrepreneurs that led to the initiation of an entrepreneurial firm (Lumpkin & Dess, 1996). Five dimensions – (i) autonomy, (ii) innovativeness, (iii) risk taking, (iv) proactiveness, and (v) competitive aggressiveness have been useful for characterising and distinguishing key entrepreneurial processes (such as supporting creativity and experimentation in introducing new products, becoming technological leaders and developing new processes). Therefore, it is a multi-dimensional construct. Original conceptualisation of EO only identified three dimensions of EO i.e. innovativeness, risk taking, and pro-activeness based on initial work done on the theory (Kropp, Lindsay, & Shoham, 2008). Two dimensions were later added i.e. autonomy and competitive aggressiveness.

All or some of the factors may be in place when a firm undertakes a new venture i.e. the essential act of entrepreneurship of entering new or established markets with new or existing goods and services. The dimensions therefore may vary in terms of their contribution to the success of a new venture.

The five dimensions of EO are defined below.

Autonomy - the self-determining, independent and deliberate act of an individual or a team in bringing forth an idea or a dream to completion. Within organisations, it also refers to the freedom granted to individuals or team members to champion a cause. It is the ability to self-direct as an individual seeks opportunities. In organisations it refers to action taken outside the organisation's constraining environment (Lumpkin & Dess, 1996).

Indications of autonomy may vary as a function of size of firm, management posture and style as well as ownership. The level of centralisation or decentralisation influences autonomy, depending on the size of the firm. The most entrepreneurial firms were found to have had the most independent thinkers as leaders. Organisations continue to foster autonomy through reduction of hierarchical structures as well as delegating authority to operating units.

Innovativeness - this reflects the firm's ability to consider, support and fund new products, experiments and creative processes which result in new products, technologies, markets and ecosystems. It is associated with product and technological innovativeness. It is an imperative component of EO as it helps organisations to pursue new opportunities. Innovativeness may take various forms from a simple disposition to engage a new product to improved technological advances. Both human and financial resource allocations to research and development represents the extent of a firm's involvement in innovativeness. The number and rate of new products or service introductions and rate of variations in existing product lines is used to assess levels of innovation in an organisation (Covin & Wales, 2012).

Risk-taking - the key aspect separating entrepreneurs from hired or general employees is the uncertainty and riskiness of being self-employed. Riskiness includes (i) venturing into the unknown; (ii) committing a significant portion of resources; and (iii) significant borrowing. Risk taking can be analysed at both firm level and individual level. Various authors have prescribed different meanings to risk depending on context. Brouthers, Nakos and Dimitratos (2015) defined risk taking as the extent to which management is willing to commit a significant portion of firm resources commitments towards ventures with a chance of failure. Risk taking organisations are therefore typified by risk taking behaviour such as incurring heavy borrowings, large human and financial resource commitments as well as grabbing of opportunities in the market.

The range of risk taking behaviour moves from basic risks or safe risks to very high-risk actions such as borrowing heavily, bringing new products and new technology in the market. Most studies of entrepreneurship investigate risk taking of individuals rather than organisations. The relationship between firm level risk taking and individual level risk taking is still an area of further research as individual key players may affect or not affect firm level risk. Individual psychological factors affect personality traits thereby impacting entrepreneurial abilities including risk taking (Širec & Močnik, 2012).

Proactiveness - the first mover advantage is deemed an important competitive advantage for capitalising on market opportunities. First movers usually get the bulk of the market share and can capture high profits whilst establishing brand equity and recognition at the same time. Proactiveness is critical in entrepreneurial studies as it is associated with a futuristic perspective which goes together with innovation and new venture creation. According to Brouthers et al. (2015) proactiveness is determined by answering the question, “Does it shape the environment by introducing new products, technologies, administrative techniques, or does it merely react?” Later Miller described an entrepreneurial firm as the first to come up with an innovation. Later definitions however agree that proactiveness does not always mean being first but can mean being one of the first (Brouthers et al., 2015).

Proactive abilities allow both managers and firms to be able to predict trends regarding future customer needs. They often find novel technologies which enable them to gain a competitive advantage in the market. Proactivity also enables identification of market niches as well as alignment of firm products with the needs of the customers (Brouthers, Nakos, & Dimitratos, 2015). Proactivity affords first mover advantage which may prove critical for technological firms as they gain technological leadership in the market as well as high switching costs thus making them market leaders. Incubators operating in the technology sector could benefit immensely by developing proactive abilities. A critical process in the incubation model is the screening process or selection of high potential incubatees (Buys & Mbewana, 2007). The researcher believes that proactivity of managers will enable identification of such incubatees thereby improving performance of the incubator. Facilitation of networking and collaborative opportunities is also a key performance area for incubator managers (Buys & Mbewana, 2007). Lewis (2001) corroborated the view that networking is key to successful incubation. The researcher proposes that proactive managers can perform this function better than non-proactive managers.

Competitive aggressiveness - Although it is closely related to proactiveness, there is a as proactiveness refers to the speed with which the firm responds to opportunities in the market and tries to influence trends in the customer’s mind thereby creating demand. In contrast competitive aggressiveness refers to how a firm relates with competitors and its inclination to directly challenge and fight competitors so as to enter a market or to improve market share position and beat industry rivals in the marketplace. Therefore, while proactiveness is about meeting demand, competitive aggressiveness is about increasing market share by directly fighting for it from competitors.

2.2.6 EO effect on performance

Although EO has been shown to influence firm performance, profitability, growth and product innovation in entrepreneurial firms (Bolton & Lane, 2012), Lumpkin and Dess (1996) argued that the link between EO and performance is contextual as the five dimensions could co-vary with regard to their contribution to performance depending on the context. This view is supported by (Jantunen, 2005) who stated that although, in some instances EO has been linked to performance, the link was weak especially with start-ups' performance and in other instances, there was no relationship at all with profitability. This further resonates with Magaji, Baba and Entebang (2015) who, in their examination of the link between EO and performance of SME's noted that environmental characteristics such as dynamism and hostility are likely to have an impact on this relationship.

Brouthers, Nakos and Dimitratos (2015) continued to build on the importance of EO by linking the construct to the Resource Based View (RBV) which suggests that each firm possess unique resources which, when combined, are able to generate improved performance. EO abilities have in some circumstances been cited as builders of a competitive advantage. In the incubator sector, the researcher believes that EO abilities can be instrumental in improving performance of government funded incubators as EO firms are more apt to introducing new products and services and are able to better survive in hostile and uncertain environments.

Paul (2009) investigated whether there was a relationship between EO and organisational sustainability intending to determine whether a dynamic entrepreneurial strategy had an impact or effect on sustainability at organisational level. In the studied organisations, a conclusion was reached which indicated a strong positive relationship between a managers EO and the level of organisational sustainability. Sustainability was measured in terms of turnover growth rates over five years. This proved that there is an important role for managers in the improvement of organisational sustainability through development and fostering of a strong EO culture amongst managers.

In their study carried out in Spain, González-Benito et al. (2009) concluded that there was a positive and significant relationship between entrepreneurship and performance and performance covered areas such as financial measures, operational measures, short and long term scope. However, they did consider that their results may be specific to the environment (i.e. Spain) therefore further elaborated that business performance is also a factor of cultural and economic context in which the business operates.

Various tests were carried out to test the relationship between EO and performance with varying results, however none of the studies tested the relationship on incubators and most of studies were done in contexts that are foreign to South Africa and emerging markets. Several factors have also been noted in literature as affecting performance of incubators, however a gap still exists around whether a higher EO may influence the performance of incubators. There is therefore undeniably a knowledge gap in understanding this relationship locally. This research aimed to test this and to propose a conceptual framework for the inter-relationship of entrepreneurial orientation and performance of incubators.

2.2.7 Covariance of EO constructs

The multidimensional nature of EO remains a subject of considerable debate (González-Benito et al., 2009). Covin and Wales (2012) argued that the five components act together to constitute a unidimensional strategic orientation. Lumpkin and Dess (1996) argued that these components vary independently of one another, thus the unidimensional argument would mask the contribution of each component to entrepreneurial orientation. There is a gap in literature regarding this area and there is no empirical evidence to suggest otherwise. The researcher was interested in identifying whether the components worked as a unit in government funded incubators or incubator managers could display components in varying proportions.

2.3 The role of a manager as a key player in EO

Bloom, Eifert, Mahajan, McKenzie and Roberts (2011) explored the importance of management and to what extent management affected the performance of a firm. They concluded that management matters; the study noted that the performance of firms studied exhibited better performance results in terms of profitability and productivity after certain management interventions.

Lewis (2001), in a study of organisational attributes of a successful incubator, identified “careful selection of manager as a key attribute”. Managers of incubators should have local knowledge, be able to multitask, and be a team player, among other assets. One of the lessons learnt from unsuccessful incubators, as investigated by Lewis (2001) was the selection of the wrong manager. Therefore the manager appears to be an important resource in determining the success of an incubator and an incompetent manager can negatively affect the performance of incubated businesses. Lumpkin and Dess (1996)

argued that entrepreneurial managers are important to the growth of firms as they provide vision and imagination necessary for identifying opportunities.

Some characteristics common among good incubator managers include:

- A diverse skills set;
- Good problem solving skills with an ability to prioritise and expedite action;
- A passion for detail yet coupled with an ability to multitask;
- A team player with good knowledge of the community; and
- Someone motivated by a challenge.

On the other hand, Buys & Mbewana (2007) also established the quality of the management team as having an effect on the success of the business incubator, particularly entrepreneurship skills as well as good leadership skills. Nevertheless, there appears to be a gap in the literature as previous researchers do not address the EO construct with regard to the competency of managers. It appears important to expand the quality of managers to include EO abilities which is their ability to identify and recognise entrepreneurial opportunities as well as exploit them.

Morris, Kuratko and Covin (2008) further argued that a manager is a planner, organiser, coordinator, motivate and facilitator. Nevertheless, they propose that the manager of an entrepreneurial venture should go beyond traditional manager roles and must themselves be entrepreneurs by being able to identify untapped opportunities. The entrepreneurial manager must therefore be able to achieve a balance between traditional roles of planning and coordination and be able to explore and exploit opportunities. Jones et al. (2006) proposed that incubators must do the following five things in order to succeed:

- Establish clear metrics for success;
- Provide entrepreneurial leadership;
- Develop and deliver value added services to member companies;
- Develop a rational new-company selection process; and
- Ensure that incubatees gain access to necessary human and financial resources.

As can be seen above, EO abilities of managers may affect whether the incubator succeeds or not.

2.4 The business incubator

Literature defines incubators broadly as organisational entities which perform a set of activities or services for incubated firms such as facility renting, coaching, training and networking (Baraldi & Havenvid, 2016). Smith and Zang defined incubators as environments that provide a protected environment for infant firms to be nurtured and help them survive and prosper. Bollingtoft and Uloi (2005) noted that one of the key purposes is not merely to shelter new firms but also to compensate for perceived failures or imperfections in the market i.e. to counter problems caused by an inefficient allocation of resources. Baraldi and Havenvid (2016) further elaborated that they also provide nascent firms an opportunity to collaborate with other people. Other authors also include intangible contributions aspects such as provision of an environment conducive for new venture creation, growth and survival (Hackett & Dilts, 2004). Grimaldi and Grandi (2005) also noted that the intention is that the incubators graduate to become independent self-sustaining businesses. The researcher is of the opinion that incubators are important tools for driving economic activity and inclusive economic growth in South Africa, hence the need to look at EO impact at the level of government funded incubators.

2.5 The elements of the incubator process model

Various topologies or incubator models exist. Literature characterises different models according to different behaviours of incubators. According to Bøllingtoft and Uihøi (2005), there are various types of incubators, including not-for-profit, for-profit and university incubators.

The list below illustrates some of the different kinds of support provided by various kinds of incubators:

- Technological and management support – specialise in scientific and technical fields by providing an appropriate physical space that nurtures the setting up of small tech businesses. They are usually closely linked to a source of knowledge such as a university. Critics usually argue that links with the university are usually weak (Baraldi & Havenvid, 2016)
- University business incubators (UBIs) – designed to accelerate national economic development by assisting startup firms particularly tech based firms.
- Specialists vs generalists – specialists use differentiation techniques that align their strategy with their core competencies.

Grimaldi and Grandi (2005) argued that there are four incubator models: business innovation centres, university business incubators, corporate business incubators and independent business incubators. The differences are highlighted in Table 1 below.

Table 1: Incubator models (Grimaldi & Grandi, 2005)

	Business Innovation Centres- Government funded	University Business Incubators	Corporate Business Incubators	Independent Business Incubators
Institutional mission	Non-profit	Non-profit	Profit oriented	Profit oriented
Industrial sectors	Generic	University area related area	Specific/ generic	Specific/ generic
Location	Areas in development process	In the proximity of the University	Industrial estate	Industrial estate
Sources of revenue	Public	Public	Equity/fees	Equity/fees
Services	Logistic services, training, information, advertisement	Logistic services, access to technical and scientific knowledge and academic facilities, networking	Day by day management support, advanced consulting services, networking, funding, logistical services	Day by day management support, advanced consulting services, networking, funding, logistical services

According to Baraldi and Havenvid (2016), incubators can either be specialist or generalist: specialist incubators exhibit a level of focus while generalist are more diversified. They argued that specialisation and strategic intent improves the competitive advantage of incubators.

2.6 South African Government-funded business Incubators

This research will concentrate on government-funded incubators which by nature are non-profit making. There are currently 57 not-for-profit government-funded incubators in South Africa under the STP. According to the STP (SEDA, 2016), the STP receives funding from the SEDA, the newly created Department of Small Business Development

and the National Treasury. The STP supports and funds 57 incubators in South Africa, with the sole objective of establishing and supporting high potential SMMEs (STP, 2016). The relevant incubator draws support from SEDA structures which include technical managers of various areas. Figure 2 below provides an overview of the SEDA and STP organisational structure.

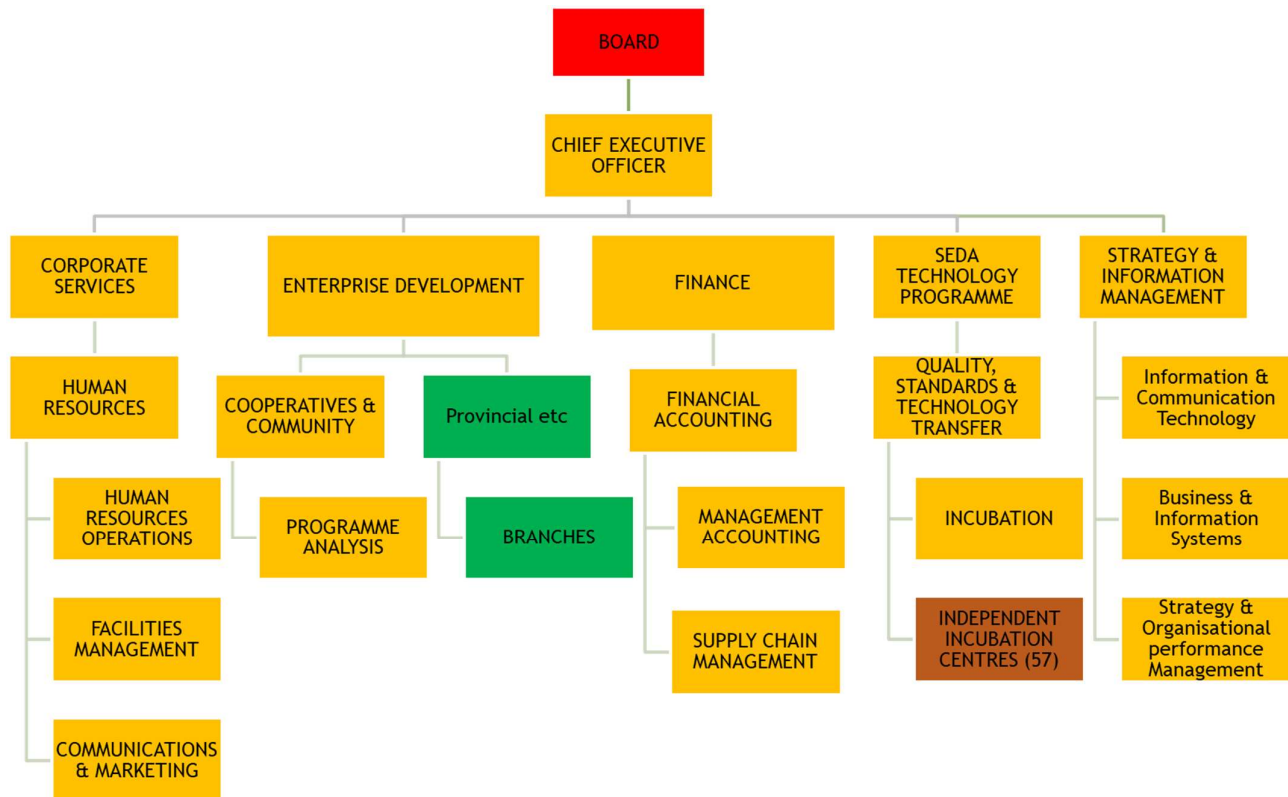


Figure 3: Organisational structure of SEDA and STP

2.7 Performance of Government-funded Incubators

This literature review would be incomplete without probing the meaning of performance of incubators. The overarching intention of the study is to investigate the impact of the EO of government-funded incubators and their managers on the performance of government-funded incubators. Jones et al. (2006) identified and agreed that the process of business incubation is a powerful tool in overcoming the pitfalls of starting and growing businesses, both in the case of high-tech businesses and smaller businesses. However in light of the above, Bøllingtoft & Ulhøi (2005) argued that the efficiency of incubators remains inconclusive. Bergek and Norrman (2008) conceded that there does not seem to be consensus with regard to a definition of effectiveness and performance and how it

should be evaluated. They, however, argued that the goals of an incubator need to be taken into account. Different incubators have different goals or multiple goals. This could be due to a large extent to the fact that incubators may sometimes have multiple stakeholders with differing interests.

Incubators can be profit making or non-profit making. Regardless of whether an incubator is run for profit or not, two main objectives emerge: (i) driving economic development by focusing on reduction of unemployment rates in a region by assisting the process of starting new companies or ventures, increasing the success rate of start-up businesses, growth as well as coaching entrepreneurs; and (ii) stimulating technology start-up businesses through commercialisation (or transfer) of research carried out in universities and research institutions by bringing them to the market. On the other hand, Aernoudt (2016) argued that a business incubator's main goal was to produce sustainable companies that enable the incubated business to be financially independent within a short space of time. Therefore, an effective incubator possesses these factors simultaneously:

- Large number of possible potential entrepreneurs;
- A high enough rotation rate;
- A sustainable rate of surviving graduates;
- Strong connections with various industries; and
- Financial markets facilitation structures.

Aernoudt (2016) therefore considered only one aspect which is sustainability of incubated companies; however, he also did not define what sustainability means or how long an incubated company must survive for it to be termed sustainable.

Although the above factors seem valid, the researcher believes that these factors apply more to private funded incubators than government funded ones. Schwartz and Gothner (2009), on the other hand, argued that different measures of employment, growth or jobs created are usually taken as measures of effectiveness. Other measures include sales, profitability growth, innovativeness, research and development (R&D) intensity and the number of patents registered. The ability to foster and develop networking interactions is also key to performance of incubators. Additionally, the degree of satisfaction with the support provided by incubator management is also considered an important aspect that reflects effectiveness. However, other factors affect performance of incubators such as the location of an incubator. High tech regions and economically depressed regions would have different requirement in terms of indicators. Incubators located in

economically depressed regions may focus on more general economic development e.g. infrastructure improvements. Therefore, given the multiplicity of objectives and dimensions of incubator success, no single incubator can be considered effective regarding all relevant variables.

From this perspective, Jones et al. (2006) categorised incubator outputs or outcomes as either hard targets or soft targets as shown below in Figure 3.

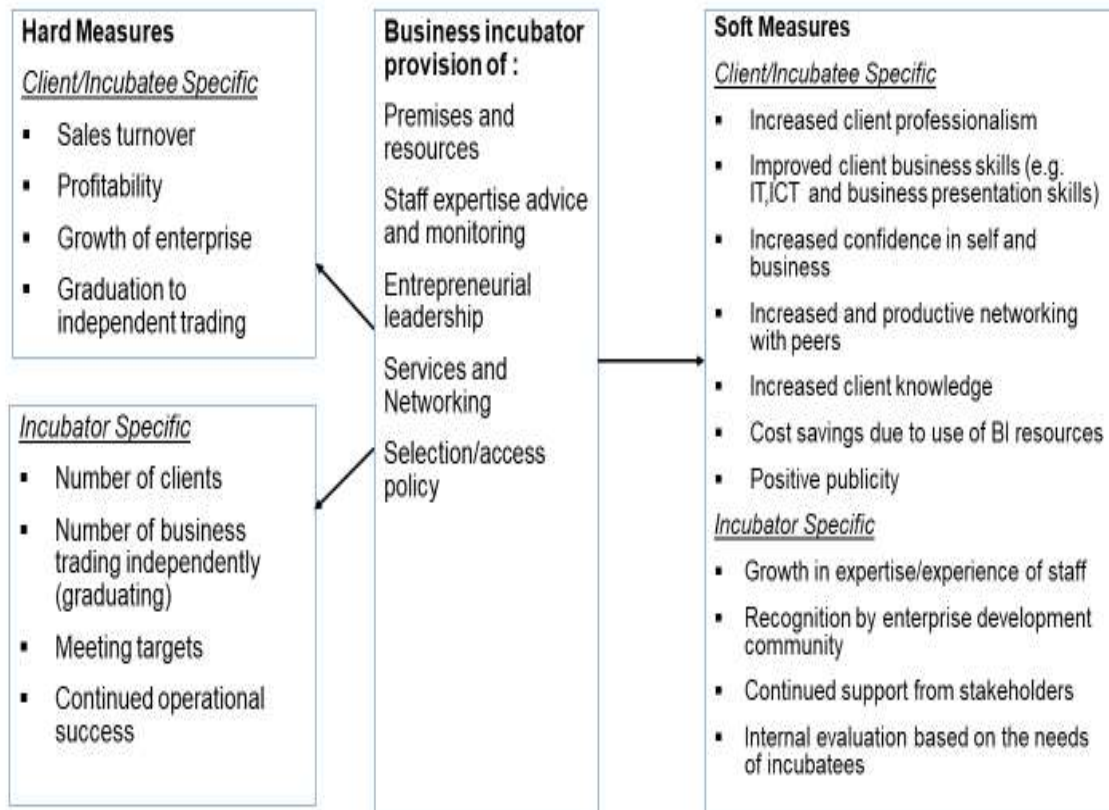


Figure 4: Hard and soft measures (adapted from Jones et al., 2006)

Jones et al. (2006) proposed that outcomes can be client- or incubatee-specific or incubator- or organisation-specific and both aspects are important when considering the effectiveness of incubation. Hard measures include profitability, turnover and growth. Soft measures of business incubator performance include growth and expertise of staff, recognition by enterprise development support community and continued support from stakeholders as well as the presence of a robust internal quality control mechanism based on the needs of incubatees.

Bergek and Norrman (2008) asserted that performance can only be a byproduct of the incubator goal as seen in Figure 5 below

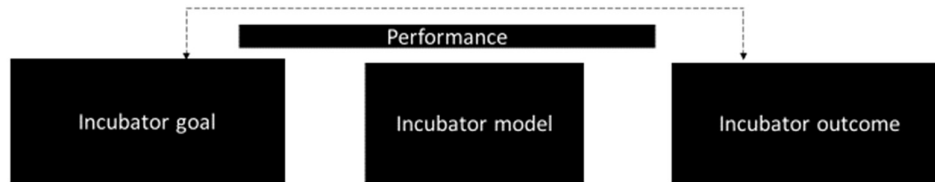


Figure 5: Performance as byproduct of incubator goal

In South Africa, the STP measures performance factors according to growth, employment created and equity, that is number of SMMEs created through the incubation process as well as the turnover of the incubated ventures (SEDA, 2016). However, it can be argued that the objective of the sponsor should be used to measure the performance of the incubation process as different sponsors have different objectives.

For this study, performance of government funded incubators is measured in alignment with the objective of the sponsor (the government, as the study is limited to government funded incubators). Therefore, for this study, performance is measured according to the following:

- Turnover growth;
- Job creation; and
- Sustainability of incubatees after graduation (survival rate).

2.8 Conclusion

Drawing from the literature review, it is apparent that EO is an important construct of the entrepreneurship theory. Incubators on the other hand, particularly government funded incubators, have a huge role to play in terms of stimulating economic development in South Africa with the incubator managers becoming key players in the process. The researcher submits that the EO orientation of both managers and incubator houses plays an important role in improving performance of incubators. Previous work done around EO has not focused on incubators and their managers.

CHAPTER 3: RESEARCH QUESTIONS

3.1 Introduction

The EO construct comprising of five components i.e. (i) risk taking, (ii) proactiveness, (iii) innovativeness, (iv) autonomy, and (v) competitive aggressiveness has been linked by to performance in various set ups and has been a key determinant in driving entrepreneurial activities which is a noted driver of economic growth. On the other hand, incubators have been an instrumental in driving economic and inclusive growth by both governments and private sector. However, the relationship between EO and incubation models has not been tested. For this study, performance is measured according to:

- Turnover growth;
- Job creation; and
- Sustainability of incubatees after graduation.

The following research questions and hypotheses were developed for this study.

3.2 Research Question 1

To what extent does the EO construct contribute to effective incubation or performance of government funded incubators?

Hypothesis 1

The null hypothesis states that EO constructs do not contribute to the performance of government funded incubators.

The alternate hypothesis states that the EO constructs contribute to the performance of government funded incubators.

3.3 Research Question 2

Is there a relationship between EO at individual managers' level and EO at organisation or incubator level?

Hypothesis 2

The null hypothesis states that EO at individual level has no relationship with EO at incubator level.

The alternate hypothesis states that there is a relationship between EO at individual level and EO at incubator level.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Research design – Purpose and scope

This chapter deliberates and discuss the research methodology motivation. This includes purpose and scope to address the research questions discussed in the previous chapter. The chapter will also define and discuss the unit of analysis, the population, the sample size, research instrument, data collection process, data analysis and research limitations.

4.2 Motivation for the research design

Research design describes and specifies the overall strategy selected and ensures that the various components and variables of a study are assessed in a logical manner. It is a masterplan that indicates the specific approach and procedures for collecting and analysing the needed data (Zikmund, 2013). This enables the scope and purpose of the research to be effectively addressed. Furthermore, it provides an outline of each step of the research process, data collation, manipulation, measurement and analysis of data (Cooper & Schindler, 2003). Creswell (2012) stated that descriptive studies assist in identifying whether certain variables move in the same direction; however, they do not establish causation. They usually involve deductive reasoning i.e. confirming hypotheses or propositions.

Most research papers are based on either a qualitative approach or quantitative approach or mixture of both. Qualitative research involves exploring a scenario and engaging oneself so as to build larger knowledge claims about a subject (Polgar & Thomas, 2013). On the other hand, quantitative research involves testing the validity of already existing theories and analysing how different variables relate (Creswell, 2012). In a quantitative study, the centre of addressing propositions lies in the relationships between variables or hypotheses normally done through surveys and experiments (Creswell, 2012).

Quantitative study comprises of stating a clear and specific research objective that facilitates a clear and robust research plan while paving the way for the direction that the research will follow. This allows for improved data collation, grouping of the data into homogeneous sub-groups for analysis and application of statistical techniques to achieve an informative conclusion. This research relies on a quantitative approach.

According to Neuman (2011), quantitative research addresses the issue of integrity by “relying on an objective technology – such as precise statements, standard techniques,

numerical measures, statistics and replication” (p.153). Creswell (2012) added that the link between and among variables is key to providing answers to research questions and developed hypothesis which is mostly done through surveys. According to Creswell (2012), a survey provides a quantitative or numeric description of trends, attitudes and opinions of a population by studying a portion or sample of the intended population. The researcher then makes inferences or claims about a specific population based on the sample.

With regard to literature studied in Chapter Two, the research objective is to determine whether there is relationship between three variables: (i) entrepreneurial orientation of government funded incubator managers, (ii) the entrepreneurial orientation of the government funded incubator as an organisation and (iii) effective incubation or performance of an incubator. Therefore, a quantitative study was used to establish whether there is a relationship between the three variables above. The possibility of a qualitative study being more useful cannot be discarded particularly in assisting with the identification of EO themes from the incubator managers; however, geographical constraints mitigated against the use of a qualitative approach. Considerations have also been made of widely used approaches in the domain of entrepreneurship orientation – mainly quantitative supported by measuring scales developed by early researchers in the field (Covin & Wales, 2012).

To enable the gathering of primary data, a questionnaire was used. Furthermore, secondary data sources were used such as annual reports from SEDA and the STP.

To ensure a structured research design, the following steps were followed;

1. Data gathering was done through the use of a well-designed questionnaire; the questionnaire was designed to be user friendly, simple and quick to complete. Participants could complete the questionnaire with minimal inconvenience, thereby reducing the element of erroneous or biased data being collated for use in this research.
2. To add to the questionnaire data, secondary data external sources were used e.g. SEDA published annual reports (2012-2016). The researcher deemed the financial statements reliable as they adhere to International Financial Reporting Standards (IFRS) and are externally audited on an annual basis. In addition, not only is this data reliable but also consistent across the various incubators, thereby it enables like for like comparison between incubators, taken in context, to assess key performance indicators and effective incubation.

4.3 Unit of analysis

According to Trochim (2006), a unit of analysis is the main object/entity that is being investigated or analysed during research. Zikmund (2013) further noted that the unit of analysis indicates what or who should provide the data. EO in this paper will be analysed at two levels i.e. EO of incubator managers as well as EO of the incubator itself, therefore the units of analysis in this study are the current incubator managers and government funded incubators.

4.4 Population

Zikmund (2003) defined population as a total collection of objects with similar characteristics. The target population of this study is incubator managers of government funded incubators. According to SEDA, there are currently 57 government funded incubator houses in South Africa operated by SEDA. The total number of managers of government funded incubators was unknown to the researcher. The details of the above-mentioned incubators are listed on the SEDA website (www.seda.org.za). Data collated was grouped accordingly with any data errors observed in the collation process highlighted and commentary provided in the analysis chapter which describes the data and manipulation process.

4.5 Sampling method and size

Saunders and Lewis (2012) noted the need for using a population sample in most research, driven by the inability to collect all data available due to limitations such as costs, time and access. A sample is a subset from a larger population. The objective of sampling during a quantitative study is to make claims about the population from which the sample would have been selected (Kumar, 2011). The samples used should nevertheless be of reasonable size and a good representation of the population under research to ensure credibility of the data used in drawing conclusions. A good sample should have the same characteristics as the population as a whole. The sample size is based upon many other considerations including resources available as well as time limits (Kumar, 2011).

Regarding sampling methods, randomisation is critical in removing bias in quantitative research (Kumar, 2011). Quantitative studies tend to favour a pre-planned sampling method i.e. probability sampling. However Kumar (2011) proposed that if the number of elements is unknown, a non-random probability sampling method may be followed. Although the number of government funded incubators is known, the number of

managers is unknown as some government funded incubators may have more than one manager depending on size. Therefore, for the purposes of this study, convenience sampling was used as it is based upon convenience in accessing the sample population. Sampling is closely associated with the sampling frame which Trochim (2006) defined as a list of the reachable population from where the sample will be drawn. However, the sampling frame may contain errors, thus may differ from the theoretical population (Bloomberg et al., 2008). In this research, the sampling frame did not differ from the population.

Responses were received from 30 head incubator managers which was 53% of the population of interest. The sample therefore was representative of the population as it consisted of a large proportion of the incubator managers, hence the researcher was able to make inferences regarding the EO abilities of both managers and incubator with a degree of confidence.

4.6 Research instrument

4.6.1 The questionnaire

According to Oakshott (2009), a questionnaire is designed to suit the respondent, method by which data will be collected and available resources.

Government funded incubator managers supported by SEDA who had access to the questionnaire were the respondents for the questionnaire. The incubators were spread across the entire country, hence a survey enabled the researcher to obtain a wider geographical access at a lower cost (Bloomberg et al., 2008). The questionnaire enabled a simpler data collection process and SurveyMonkey was used as all incubator managers have internet access.

The survey made use of nominal, ordinal and ratio scales. Questions were formulated to address the various components of the EO construct. Questions were asked in incremental difficulty as ordered from general to specific as suggested by Hofstee (2006).

Additionally, a Likert-type scale often used to judge attitudes (Bloomberg et al., 2008) was used to obtain data for measuring the entrepreneurial orientation of government funded incubators as well as the entrepreneurial orientation of individual incubator managers. Questions were asked that related to the five dimensions of entrepreneurial orientation: (i) risk taking, (ii) pro-activeness, (iii) innovativeness, (iv) aggressiveness, and (v) autonomy.

A pilot study was carried out with six private incubator managers who were asked to complete the questionnaire and make comments. The questionnaire was pilot tested for insights into the effectiveness of its design, relevance and sufficiency of the information and to allow for some adjustments before the actual data collection. At the end of the pilot questionnaire, the participants were requested to add any comments with respect to the questionnaire to allow future development and give any advice that could then be incorporated into the final questionnaire.

Amendments were done based on the results as certain questions were skipped which enabled the researcher to force respondents to complete questions before moving to the next question. Besides the above-mentioned amendment, the feedback was that generally the questionnaire was simple and incubator managers had the necessary information to fill in the questionnaire.

4.7 Validity

With regard to validity of the research instrument, Zikmund (2013) noted that it represents the accuracy of a measure or the extent to which a score represents a concept or construct. Neuman (2011) expanded on this by noting that a measurement instrument should be valid for a specific purpose. Blumberg et al. (2008) added that validity is all about the ability of a research instrument to measure what it is intended to measure. Creswell (2009) was of the view that validity means that one can make claims and inferences that are meaningful and can be used to draw conclusions. In other words, are we accurately measuring what we think we are measuring? A Cronbach alpha test was carried out to test the validity of the questions for every component of the EO construct i.e. (i) risk taking, (ii) innovativeness, (iii) proactiveness, (iv) aggressiveness, and (v) autonomy.

According to Zikmund (2013), four approaches exist in terms of establishing validity i.e. face validity, content validity, criterion validity as well as construct validity.

4.7.1 Face validity

Face validity refers to the ability of the measurement instrument to measure the relevant constructs in the research questions (Neuman, 2011). Zikmund (2013) further explained that face validity refers to the ability of a scale to logically reflect the constructs or concepts being measured. For this study, the questionnaire should be able to measure the EO construct at the level of the incubator manager and the level of the incubator itself.

4.7.2 Content validity

Content validity refers to the ability of the questionnaire to capture the complete meaning of the applicable constructs in the researcher is questioning (Neuman, 2011). Zikmund (2013) further stated that it is the degree that a measure covers a domain of interest.

4.7.3 Criterion validity

This measures the practicality of the measure on the ground (Zikmund, 2013).

4.7.4 Construct validity

Construct validity exists when a measure reliably measures and truthfully represents a unique concept. It represents the convergence of all the types of validity (Zikmund, 2013).

4.8 Reliability

Reliability refers to the non-varying of the numerical results produced by an indicator due to characteristics of the measurement process or the measurement instrument itself (Neuman, 2011) and that the questionnaire is able to supply results consistently (Blumberg et al., 2008). Neuman (2011) differentiates between several types of reliability by discussing stability reliability, which refers to the ability of the questionnaire to deliver the same results in a different time period, and representative reliability, whereby the same results are delivered when applied to different populations. According to Neuman (2011), achieving perfect reliability is a rare occurrence however reliability can be improved by initially using a pilot version of the questionnaire. A pilot study was used in this study to improve reliability.

Additionally, it can be proposed that the outcomes produced by the questionnaire had stability and can produce similar results when applied in a different time period by testing incubator managers again. However, the questionnaire may not produce exactly the same answers when applied across all possible sub populations of the incubator managers during further research with similar questions.

4.9 Bias

Method bias which results from constructs influence by research methods used can lead to the researcher drawing incorrect conclusions (Burton-Jones, 2009). According to Burton-Jones (2009), research methods consist of three components i.e. the rater (the person responding to the questionnaire and rating a characteristic), the instrument (the device used to score a characteristic) and the process the rater utilises to make the score

record. Regardless of the many types of bias that exist, the researcher believes this research was subjected to non-response bias and social desirability bias.

Non-responsive bias was experienced due to some incubator managers not completing the questionnaire. However, the researcher tried to reduce the bias to an acceptable level by making consistent follow-ups and calling the managers so as to improve the response rate. The researcher sought direct permission from SEDA to follow up directly with incubator managers rather than letting SEDA managers do the follow-ups. Social desirability could also have been present due to incubator managers being less truthful about their EO abilities in a bid to appear more entrepreneurial to SEDA managers as the questionnaire was distributed by SEDA managers. However, the researcher attempted to reduce this bias by explaining in written communication and during follow-up calls that responses were confidential and that more accurate answers would enable the research to determine the impact of EO in government funded incubators in a bid to improve performance of the incubators.

4.10 Data collection

Data collection began soon after obtaining ethical clearance from the Research and Ethics Committee of the Gordon Institute of Business Science (GIBS).

Initially the Communications Manager for SEDA was contacted who referred the researcher to the head of Incubation at SEDA who forwarded the survey link to the incubator managers. However, the response rate was low which necessitated the researcher contact the head of incubation again, seeking assistance regarding the responses. The supervisor of the researcher intervened by writing a letter to SEDA's head of research who in turn permitted the researcher to contact the managers directly and request assistance regarding completing the questionnaire. This assisted in improving the response rate.

4.11 Experimental design and data description

In this research, participants were required to complete a questionnaire. The questionnaire comprised a total of 71 questions that were split between the five constructs namely: (i) risk taking, (ii) pro activeness, (iii) innovativeness, (iv) aggressiveness, and (v) autonomy of both the incubator manager and the incubator house itself. The responses were meant to be measurable and hence reflected the degree of the construct for each manager or incubator house. For each question in

section C, there were five optional responses: Strongly agree, Agree, Disagree, Strongly agree and Don't Know, from which the participant was expected to select only one response. Each response was captured as a numerical score respectively set between 5 for 'Strongly Agree' and 1 for 'Don't Know'. These responses made up the sample data which gave rise to results in Chapter Five and the analysis in Chapter Six.

4.12 Data analysis

Due to the need for the research to establish whether there is a possible relationship between three different variables, bivariate statistics were utilised to determine either covariance or statistical independence (Neuman, 2011). Correlation coefficients, and measures of association were used to evaluate the existence of a relationship or link between the EO of government funded incubator managers, government funded incubators themselves and the performance of government funded incubators.

Biographical data such as age (ratio data) and gender (nominal data) of the incubator managers as well as the incubator house's profile data such as sector and aid granted were analysed with regard to the mean or mode (Neuman, 2011). Descriptive statistics such as frequency tables, the mean, standard deviation and standard error were recorded and analysed. Appropriate pie charts were utilised to show nominal data. This provided useful information regarding the profile of the manager for the purpose of this research.

To assess the EO construct and its components at both the level of the incubator manager and the incubator house, the Likert-type scale was utilised (see Appendix for Questionnaire). Ratio scales were used to measure growth in revenue.

A 10% level of significance was set by the researcher to analyse the significance of the correlations due to the smaller sample size. Four questions listed below were reversed on the research instrument; however, during the analysis the questions were corrected and analysed accordingly.

Table 2: Reversed questions

I dislike uncertainty.
I put strong emphasis on proven methods and approaches.
I dislike creative projects.
The incubator is cautious and prefers exploring gradually.

4.13 Research assumptions and limitations

The following assumptions and limitations were relevant to the study:

4.13.1 Assumptions

- Data provided was a reflection of reality.
- Normality was assumed for the purpose of the study.
- Data provided by participants was accurate to the best of the researcher's knowledge.
- Good sampling techniques were used to ensure data samples used were random.
- The participants/incubators managers' opinions were independent, and so were the incubators for which they work.

4.13.2 Limitations

- The difficulties in accessing the sampling frame (57 government funded incubator managers supported by SEDA) as some contact details on the database were not updated.
- Some incubator managers were not willing to complete the survey and the researcher had to make numerous phone calls before managers responded, thus significantly reducing the response rate from the expected response rate of 75%.
- The study does not give the incubator managers a voice so there is lack of a deeper understanding obtained regarding the area of study.
- Normality of data was assumed.

4.14 Summary

The research methodology is summarised in Table 3 that follows.

Table 3: Summary of Research Methodology

	Research Question	Research design and methodology	Research Instrument	Data analysis
1	To what extent does the EO construct contribute to effective incubation or performance of government funded incubators?	Quantitative and descriptive	Questionnaire	<ul style="list-style-type: none"> • Mean • Mode • Standard deviation • Correlation coefficients
2	Does EO at individual managers level and EO at organisation or incubator level have a relationship?	Quantitative and descriptive	Questionnaire	<ul style="list-style-type: none"> • Mean • Mode • Standard deviation • Correlation coefficients

CHAPTER 5: RESULTS

5.1 Introduction

This chapter presents and summarises findings from data that was gathered from participants who responded to the online survey for this study. It also facilitates an understanding of the data and tests that were performed to assist in answering the research questions. The aim of the questionnaire used in the survey was to measure the contribution and impact of the entrepreneurial orientation of both incubator managers and government funded incubatees to effective incubation or improved performance.

For purposes of this research, entrepreneurial orientation is defined as an organisational decision making position or strategic intent with proclivity or inclination which favours entrepreneurial activities (Covin & Wales, 2012) and is measured by five constructs i.e. (i) risk taking, (ii) proactiveness, (iii) innovativeness, (iv) aggressiveness, and (v) autonomy at both the individual manager level and the incubator level. Effective incubation or performance is measured through turnover growth, number of jobs created and sustainability of incubatees' businesses after graduation.

The chapter starts by highlighting the response rate to questionnaires that were sent out and the number of responses that were received for each question. Demographics as well as descriptive statistics (such as mean scores) were used to explain the composition of the sample. The process carried out to measure construct validity and reliability of the measuring instrument is discussed. Results from tests on the relationships between the constructs with entrepreneurial orientation are then presented.

5.2 Survey response rate

The data was collected over a period of four weeks from 15 August 2017 to 30 September 2017 using Survey Monkey. Over the period, 30 responses were received thus giving a response rate of 53% from the population of 57 head managers of government funded incubators. The average completion rate on Survey Monkey was 85% i.e. respondents answered 85% of the questionnaire on average. Questions that were not completed were therefore not considered during data analysis. When scores per construct were calculated, only responses where all the questions within the construct had been completed, were taken into account and when correlations between constructs were tested, only responses from participants that had answered all questions for both constructs being compared was taken into account. Twenty-eight respondents answered all or most of the questions, two

respondents did not answer any of the construct questions and those questionnaires were omitted from the analysis.

5.3 Respondent demographics which are characteristic of the population

The target population was made up of head incubator managers of the 57 government funded incubators under SEDA's STP programme. The respondents support various sectors of incubators and are spread across the country. The graph below shows the different incubation sectors supported by respondents. The bulk of managers support mixed incubators (32%) while manufacturing and technology are next with 21% each. Mixed incubators support a mixture or variety of businesses, hence are not linked to one sector.

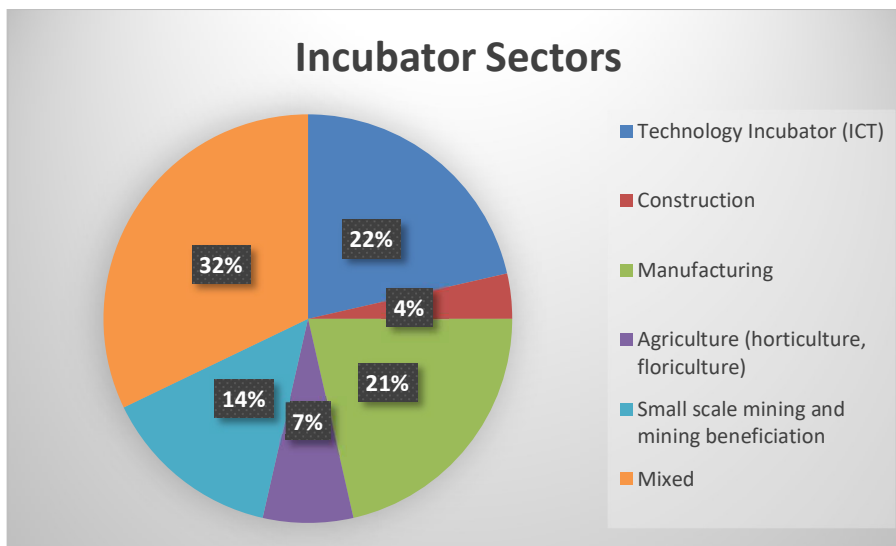


Figure 6: Incubator Sectors

The incubators themselves differed in size according to how many incubatees they supported and also, they differed on the grant amounts received from SEDA. Size of incubator was also determined by the number of employees employed by the incubator.

Other demographics of respondents

Gender statistics were dominated by males with 19 (68%) and nine (32%) females. This was anticipated as, in general, management in South Africa is still male dominated.

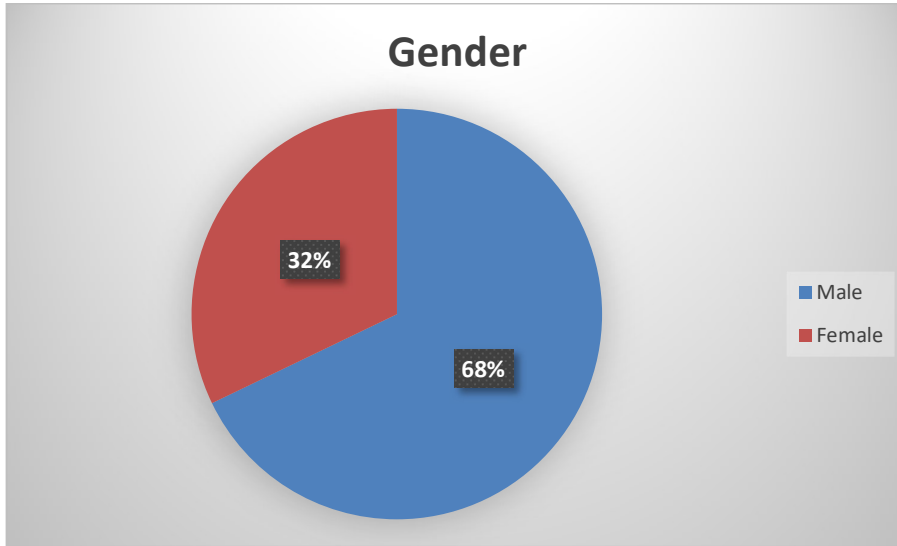


Figure 7: Percentage of respondents based on gender

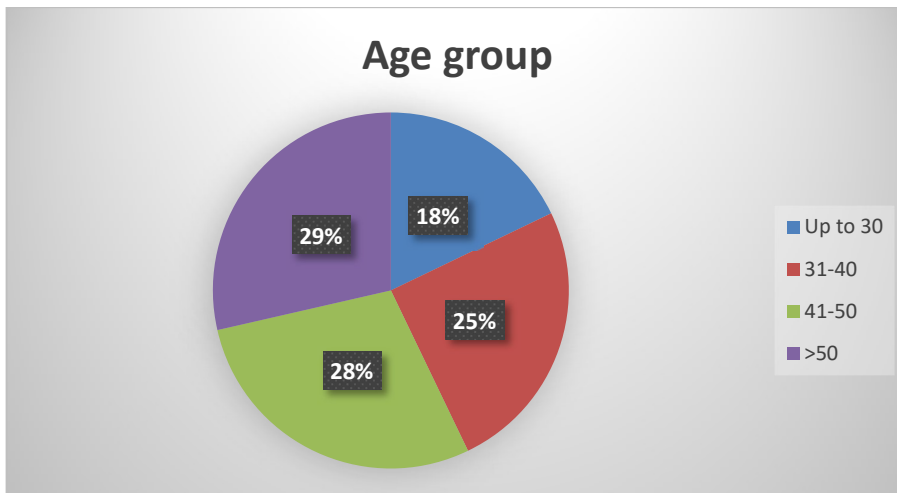


Figure 8: Percentage of respondents based on age

The majority of government funded incubator managers are above 41 years old and less than 20% of head managers are below 20% as expected for these types of organisations as experience is valued in such organisations. Interestingly, the majority of technology incubators were also above 41 years old.

Demographics were also captured as a part of the questionnaire to ensure variety in the data in respect of level of working experience and qualifications. Tests were performed to validate if the responses to the Likert scale questions differed based on these demographic criteria. The following figures (8 and 9) provide a graphical representation

of the percentage of the sample based on experience and highest level of education completed. Most incubator managers had a post-graduate degree (46%) and were moderately experienced with 25% of managers possessing experience of above five years but below ten years.

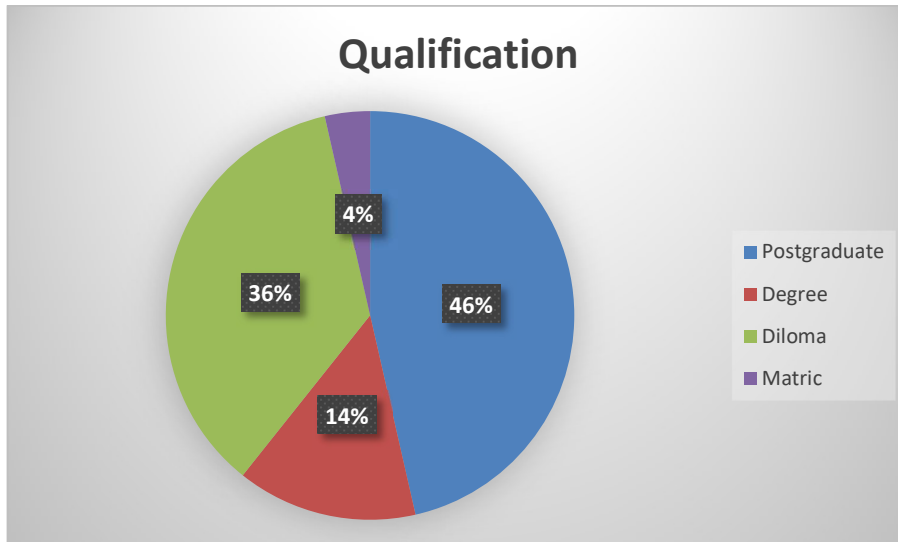


Figure 9: Percentage of respondents based on qualification

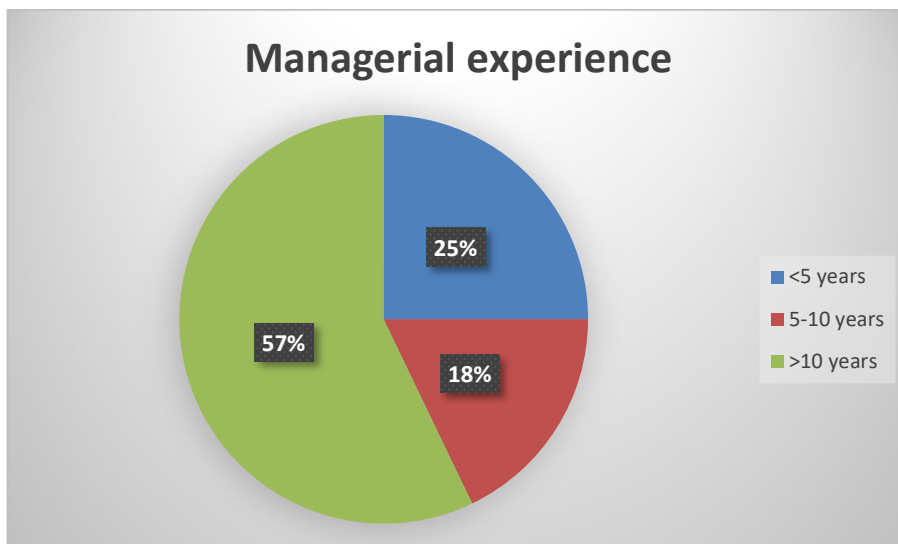


Figure 10: Percentage of respondents based on managerial experience

5.4 Construct validity-state dependent and independent variable

Before any detailed tests were performed on the data, it was necessary to validate the components of the EO constructs on which the research questions were based. Normally this is done through an exploratory factor analysis such as KMO and Bartlett's test for sphericity. However, factor analysis could not be carried out because the sample was too small as this requires about 300 respondents (Hair, Black, Babin, & Anderson, 2010).

However, a principal component analysis was carried out and it showed that some of the questions on the questionnaire were reversed. Reversed questions were corrected before data analysis and scores were duly aligned. The three reversed questions were highlighted in Chapter Four on Research Methodology. The principal complement analysis is a primitive type of factor analysis which does not involve a rotation. Below are the results of the analysis.

5.5 Instrument reliability results

In order to measure reliability of the research instrument, Cronbach alpha tests were performed on each of the constructs. The results showed that the measuring instrument was reliable. All the constructs had a Cronbach alpha coefficient of at least 0.60. The scores for each construct are indicated in the following sections. Due to the small sample, a coefficient of above 0.5 was deemed acceptable.

5.5.1 Self-risk-taking reliability statistics

Reliability of the self-risk taking is acceptable with a Cronbach alpha of 0.744. The results in the table below show that deleting any of the items would not improve the Cronbach's alpha therefore all the questions were appropriate. All the questions were therefore appropriate to measure the self-risk-taking construct.

Table 4: Cronbach alpha for self-risk-taking reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.744	0.750	5

Table 5: Self-risk-taking reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
Compared to the average person, I would say I take more risks	16.82	6.522	0.316	0.300	0.776
I like to take bold action by venturing into the unknown.	16.82	6.004	0.565	0.399	0.678
I am willing to risk money on something that might yield a high return.	17.00	6.296	0.547	0.351	0.687
I tend to act boldly in situations where risk is involved.	16.93	6.365	0.448	0.552	0.720
I like uncertainty.	17.00	5.259	0.707	0.632	0.616

5.5.2 Self-innovativeness reliability statistics

The initial Cronbach alpha ran for the construct was below the acceptable 0.5 (see Table 6 below).

Table 6: Cronbach alpha (1) for self-innovativeness reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.488	0.515	10

However, two questions were reversed and after reversal, the Cronbach alpha was became acceptable as shown in the Table 7 below. The questions were therefore deemed reliable (see Table 8).

Table 7: Cronbach alpha (2) for self-innovativeness reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.578	0.607	10

Table 8: Self-innovativeness reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item -Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
I generally adapt to change easily.	33.4643	17.591	0.324	0.306	0.539
I often like to try new and unusual methods that are not typical.	33.3929	17.803	0.287	0.291	0.546
I put strong emphasis on proven methods and approaches.	34.5000	16.704	0.234	0.517	0.561
My supervisor is willing to listen to my ideas.	33.5714	16.921	0.314	0.409	0.537
I apply novel approaches to problem solving when solving problems.	33.5000	17.370	0.436	0.419	0.521
I take a pragmatic approach to solving problems.	34.0000	16.667	0.318	0.599	0.535
I enjoy assisting incubatees develop new products and services.	33.2143	19.656	0.140	0.431	0.575
I believe that the company currently sells products that are unique and different.	33.7857	15.212	0.525	0.546	0.476
I dislike creative projects.	34.9643	17.295	0.133	0.386	0.598
I have a sense of security in my job	36.0000	18.815	0.046	0.338	0.611

5.5.3 Self-proactive reliability statistics

Reliability of the self-proactive construct was acceptable with a Cronbach alpha of 0.733 (see Table 9). All the questions were therefore appropriate to measure the construct (see Table 10).

Table 9: Cronbach alpha for self-proactive reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.733	0.780	9

Table 10: Self-proactive reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item -Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
I usually act in anticipation of future problems, needs or changes	34.36	18.312	-0.089	0.249	0.824
I tend to plan ahead on projects	33.39	13.210	0.562	0.522	0.678
I take initiative to ensure projects move on	33.07	13.698	0.738	0.838	0.652
I enjoy working to a deadline	33.29	14.952	0.538	0.848	0.689
I can identify an opportunity	32.75	17.528	0.263	0.563	0.731
I like to work under high pressure environment	32.96	14.110	0.642	0.631	0.668
I am spontaneous /flexible at work	33.11	15.062	0.427	0.476	0.706
I manage resources effectively to assist the incubatees	32.75	16.269	0.593	0.517	0.699
I can do research on market trends on a regular basis	33.46	15.295	0.453	0.663	0.702

5.5.4 Self-autonomy reliability statistics

Reliability of the self-autonomy construct was acceptable with a very high Cronbach alpha of 0.839 (see Table 11). All the questions were therefore appropriate to measure the construct (see Table 12).

Table 11: Cronbach Alpha for self-autonomy reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.839	0.856	3

Table 12: Self-autonomy reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item -Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
I am permitted the freedom to act and think without interference.	8.43	2.772	0.675	0.475	0.840
I can perform jobs that allow me to make my own decisions/judgements	8.21	3.656	0.784	0.626	0.729
I am given freedom and independence to decide how to go about doing my work.	8.21	3.434	0.704	0.550	0.777

5.5.5 Incubator risk taking reliability statistics

Reliability of the incubator's risk-taking construct was low with a Cronbach alpha of 0.445 (see Table 13). However, risk taking was also measured at the individual manager level hence the construct was covered, and the researcher was still able to determine whether the construct contributed to effective incubation.

Table 13: Cronbach Alpha for incubator risk taking reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardised Items	N of Items
0.445	0.549	7

Table 14: Incubator risk taking reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
Being a risk taker is considered a positive attribute for incubator staff.	22.11	10.333	0.535	0.502	0.270
People in our incubator are encouraged to take calculated risks during selection and mentoring process.	21.81	11.618	0.456	0.508	0.338
Senior people are able to take risk decisions.	22.22	9.718	0.422	0.301	0.285
Our incubator encourages both exploration and experimentation for opportunities.	21.85	12.977	0.164	0.433	0.428
The incubator has a strong tendency for high risk projects.	23.00	12.231	0.024	0.519	0.512
The incubator is not cautious and prefers exploring.	23.00	12.769	-0.046	0.564	0.555
When confronted with decision making situations the incubator does not adopt a cautious wait and see posture.	23.56	10.564	0.214	0.382	0.405

5.5.6 Incubator innovativeness reliability statistics

Reliability of the incubator innovativeness construct was acceptable with a Cronbach alpha of 0.690 (see Table 15). All the questions were therefore appropriate to measure the construct (see Table 16).

Table 15: Cronbach Alpha for incubator innovativeness reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardised Items	N of Items
0.690	0.736	8

Table 16: Incubator innovativeness reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
Your organisation has a formal approach for generating ideas and using creativity/innovation to address business issues.	26.81	18.541	0.352	0.322	0.673
The incubator actively promotes improvements and innovations in its processes.	25.78	19.487	0.605	0.616	0.624
Our incubator is innovative in its methods of operation.	25.96	20.114	0.448	0.607	0.649
Meetings at your incubator often produce truly innovative results.	26.26	17.430	0.668	0.723	0.592
The incubator seeks new ways to do things.	25.70	21.140	0.474	0.683	0.654
Senior managers of the incubator prefer incubatees with new products and services.	27.11	22.333	0.042	0.393	0.751
My organisation has a budget for innovation.	27.04	19.960	0.311	0.330	0.678
Incubator managers have a strong emphasis on research and development.	26.37	18.781	0.435	0.330	0.647

5.5.7 Incubator proactive reliability statistics

Reliability of the incubator proactive construct is acceptable with a Cronbach alpha of 0.860 (see Table 17). All the questions were therefore appropriate to measure the construct (see Table 18).

Table 17: Cronbach Alpha for Incubator proactive reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardised Items	N of Items
0.860	0.868	7

Table 18: Incubator proactive reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
I feel encouraged to come up with new and better ways of doing things.	25.59	13.943	0.636	0.485	0.842
We always approach incubatees with alternative methods to solve their questions.	25.37	14.858	0.825	0.763	0.817
We excel at identifying opportunities for our incubatees.	25.70	13.370	0.697	0.525	0.832
Champions of innovation are supported in driving projects through to implementation.	25.59	15.789	0.563	0.348	0.848
The incubator manager encourages incubatees to respond to competitors' actions.	25.52	16.259	0.460	0.339	0.862
The incubator manager encourages incubatees to introduce new products and services.	25.30	15.217	0.741	0.688	0.827
Leaders identify problems, collect information from various sources, and synthesise that information into effective solutions.	25.37	16.473	0.569	0.399	0.849

5.5.8 Incubator aggressiveness reliability statistics

Reliability of the incubator aggressiveness construct is acceptable with a Cronbach alpha of 0.873 (see Table 19). All the questions were therefore appropriate to measure the construct (see Table 20).

Table 19: Cronbach Alpha for incubator aggressiveness reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardised Items	N of Items
0.873	0.873	3

Table 20: Incubator aggressiveness reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
Our incubator is intensely competitive.	7.07	5.328	0.768	0.764	0.809
Our incubator takes an aggressive approach when competing.	7.29	4.730	0.882	0.821	0.699
Our incubator prefer rapid growth to gradual growth.	7.43	5.735	0.630	0.474	0.931

5.5.9 Incubator autonomy reliability statistics

Reliability of the incubator autonomy construct is acceptable with a Cronbach alpha of 0.943 (see Table 21). All the questions were therefore appropriate to measure the construct (see Table 22).

Table 21: Cronbach Alpha for incubator autonomy reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on Standardised Items	N of Items
0.943	0.946	6

Table 22: Incubator autonomy reliability statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach Alpha if Item Deleted
Incubator employees are permitted to act and think without interference.	20.43	19.958	0.843	0.743	0.930
Employees perform jobs that allow them to make own decision/judgement.	20.68	19.411	0.849	0.807	0.930
Employees are given freedom and independence to decide how to go about doing their work.	20.68	19.337	0.858	0.885	0.929
Employees are given freedom to communicate without interference	20.50	21.222	0.914	0.897	0.924
Employees are given authority and responsibility to act alone if they think it's in the best interest of the business	20.46	22.332	0.700	0.709	0.946
Employees have access to all vital information.	20.29	21.471	0.843	0.769	0.931

5.6 Descriptive statistics for observable variables and constructs

Descriptive statistics for each of the questions that make up a construct are given in the sub-sections below. Using these descriptive statistics, a score was calculated per construct as the average score for questions within that construct. When scores for each observable variable were calculated, questions not completed were excluded from the data. When scores per construct were calculated, only responses where all questions within the construct had been completed, were taken into account and this number is represented by the "Valid N (list wise)" in the descriptive statistics tables.

5.6.1 Self-risk-taking scores

The self-risk-taking section of the questionnaire contained five questions that allowed each respondent to give a measure of how they view their risk taking behaviour. As discussed in Chapter Four, Likert scales that were used to quantify ranged from 1 "strongly agree" to 5 "Don't know". Table 23 below shows the descriptive statistics for all the variables used to measure risk taking of individual managers.

Table 23: Descriptive statistics for self-risk-taking

	N	Minimum	Maximum	Mean	Std. Deviation
Compared to the average person, I would say I take more risks.	28	1	5	4.32	0.945
I like to take bold action by venturing into the unknown.	28	2	5	4.32	0.819
I am willing to risk money on something that might yield a high return.	28	2	5	4.14	0.756
I tend to act boldly in situations where risk is involved	28	2	5	4.21	0.833
I like uncertainty.	28	2	5	4.14	0.891

The scores indicate that respondents believed they were risk takers with a mean of above 4 on all five questions. The minimum score of 4.14 is higher than 'strongly agree' which shows that participants view themselves as risk takers.

5.6.2 Self-innovation scores

Ten questions represent the construct of self-innovativeness and measure how managers view or perceive their innovativeness as individuals. Descriptive statistics indicate that head managers of government funded incubators view themselves as fairly innovative.

Table 24: Descriptive statistics for self-innovation

	N	Minimum	Maximum	Mean	Std. Deviation
I generally adapt to change easily.	28	1	5	3.14	1.325
I often like to try new and unusual methods that are not typical.	28	2	5	4.36	0.826
I put strong emphasis on proven methods and approaches.	28	2	5	4.43	0.836
My supervisor is willing to listen to my ideas.	28	1	5	3.32	1.219
I apply novel approaches to problem solving when solving problems.	28	2	5	4.25	1.005
I take a pragmatic approach to solving problems.	28	2	5	4.32	0.723
I enjoy assisting incubatees develop new products and services.	28	1	5	3.82	1.056
I believe that the company currently sells products that are unique and different.	28	4	5	4.61	0.497
I like creative projects.	28	2	5	4.04	1.036
I have a sense of security in my job.	28	1	5	1.82	1.124

5.6.3 Self-proactive scores

Nine questions in the questionnaire measured perceived self-proactiveness of incubator managers. On most questions managers view themselves as very proactive. Managers scored the lowest regarding anticipations of changes. Table 26 below illustrates the descriptive statistics relating to the construct.

Table 25: Descriptive statistics for self-proactive scores

	N	Minimum	Maximum	Mean	Std. Deviation
I usually act in anticipation of future problems, needs or changes.	28	1	5	3.04	1.201
I tend to plan ahead on projects.	28	1	5	4.00	1.089
I take initiative to ensure projects move on.	28	2	5	4.32	0.819
I enjoy working to a deadline.	28	2	5	4.11	0.786
I can identify an opportunity.	28	4	5	4.64	0.488
I am spontaneous/ flexible at work.	28	1	5	4.43	0.836
I like to work under high pressure environment.	28	2	5	4.29	0.897
I manage resources effectively to assist the incubatees.	28	4	5	4.64	0.488
I can do research on market trends on a regular basis.	28	2	5	3.93	0.813

5.6.4 Self-autonomy scores

Only three questions measured the self-autonomy of managers. Managers considered themselves autonomous with very high means above 4 on all three questions. Below are the descriptive statistics.

Table 26: Descriptive statistics for self-autonomy scores

	N	Minimum	Maximum	Mean	Std. Deviation
I am permitted the freedom to act and think without interference.	28	2	5	4.00	1.186
I can perform jobs that allow me to make my own decisions/judgements.	28	2	5	4.21	0.833
I am given freedom and independence to decide how to go about doing my work.	28	2	5	4.21	0.957

5.7 EO constructs at incubator level

5.7.1 Perceived risk-taking of government funded incubator

Seven questions were measuring the construct in the questionnaire. Managers responses were high on most of the questions except the question regarding caution giving a mean of 2.7.

Table 27: Descriptive statistics for perceived risk-taking of government funded incubator

	N	Minimum	Maximum	Mean	Std. Deviation
Being a risk taker is considered a positive attribute for incubator staff.	27	2	5	4.15	0.907
People in our incubator are encouraged to take calculated risks during selection and mentoring process.	27	2	5	4.44	0.698
Senior people are able to take risk decisions.	27	1	5	4.04	1.192
Our incubator encourages both exploration and experimentation for opportunities.	27	2	5	4.41	0.694
The incubator has a strong tendency for high risk projects.	28	1	5	3.25	1.323
The incubator is not cautious and prefers exploring.	28	1	5	3.25	1.378
When confronted with decision making situations the incubator does not adopt a cautious wait and see posture.	27	1	5	2.70	1.353

5.7.2 Perceived innovativeness of government funded incubator

Eight questions measured the construct. Managers' responses indicated that incubators are somewhat innovative with means ranging from 3.04 to 4.44 (see Table 28 below).

Table 28: Descriptive statistics for perceived innovativeness of government funded incubator

	N	Minimum	Maximum	Mean	Std. Deviation
Your organisation has a formal approach for generating ideas and using creativity/innovation to address business issues?	27	1	5	3.33	1.387
The incubator actively promotes improvements and innovations in its processes.	28	1	5	4.32	0.863
Our incubator is innovative in its methods of operation.	27	2	5	4.19	0.921
Meetings at your incubator often produce truly innovative results	27	2	5	3.89	1.086
The incubator seeks new ways to do things	27	2	5	4.44	0.698
Senior managers of the incubator prefer incubatees with new products and services	27	1	5	3.04	1.344
My organisation has a budget for innovation	27	1	5	3.11	1.188
Incubator managers have a strong emphasis on research and development.	27	1	5	3.78	1.188

5.7.3 Perceived proactiveness of government funded incubator

Managers rated proactiveness of incubators to be fairly high with all questions scoring high means. See Table 29 that follows.

Table 29: Descriptive statistics for perceived proactiveness of government funded incubator

	N	Minimum	Maximum	Mean	Std. Deviation
I feel encouraged to come up with new and better ways of doing things.	27	2	5	4.15	1.064
We always approach incubatees with alternative methods to solve their questions.	28	2	5	4.32	0.772
We excel at identifying opportunities for our incubatees.	28	2	5	4.00	1.089
Champions of innovation are supported in driving projects through to implementation.	28	2	5	4.11	0.832
The incubator manager encourages incubatees to respond to competitors' actions.	28	2	5	4.18	0.863
The incubator manager encourages incubatees to introduce new products and services	28	2	5	4.39	0.786
Leaders identify problems, collect information from various sources, and synthesise that information into effective solutions.	28	2	5	4.32	0.723

5.7.4 Perceived aggressiveness of government funded incubator

Only three questions measured aggressiveness. Managers' responses indicated that means are not as high as other constructs i.e. at incubator level incubators maybe moderately aggressive. See Table 30 below.

Table 30: Descriptive statistics for perceived aggressiveness of government funded incubator

	N	Minimum	Maximum	Mean	Std. Deviation
Our incubator is intensely competitive.	28	1	5	3.82	1.219
Our incubator takes an aggressive approach when competing.	28	1	5	3.61	1.257
Our incubator prefers rapid growth to gradual growth.	28	1	5	3.46	1.261

5.7.5 Perceived autonomy of government funded incubator

The construct was measured by six questions and the lowest means were recorded on questions 2 and 3 which were addressing the ability of employees to make their own decisions and their freedom to decide how to do their work.

Table 31: Descriptive statistics for perceived autonomy of government funded incubator

	N	Minimum	Maximum	Mean	Std. Deviation
Incubator employees are permitted to act and think without interference.	28	1	5	4.18	1.090
Employees perform jobs that allow them to make own decision/judgement.	28	1	5	3.93	1.152
Employees are given freedom and independence to decide how to go about doing their work.	28	1	5	3.93	1.152
Employees are given freedom to communicate without interference	28	1	5	4.11	0.875
Employees are given authority and responsibility to act alone if they think it's in the best interest of the business	28	1	5	4.14	0.932
Employees have access to all vital information.	28	1	5	4.32	0.905

5.8 Comparing mean scores across subgroups

The mean scores per construct were compared within the different demographic groups to understand if responses were different depending on demographics.

5.8.1 Comparing scores by gender

The ANOVA showed that there was a significant difference between male and female risk taking with a sig value of 0.01. The same was also observed at incubator level with a sig of 0.02. Males also showed more aggressiveness and autonomy than females with sig values of 0.002 and 0.038 respectively. See Tables 32 and 33 below for details.

Table 32: Gender group descriptive statistics

		N	Mean	Std. Deviation
F1 Self Risk-taking	Male	19	4.4737	0.45807
	Female	9	3.7111	0.53955
F2 Self Innovativeness	Male	19	4.0895	0.46654
	Female	9	3.8667	0.36742
F3 Self Proactive	Male	19	4.1754	0.56452
	Female	9	4.1111	0.25459
F4 Self Autonomy	Male	19	4.1754	0.90519
	Female	9	4.0741	0.84620
F5 IEO Risk Taking	Male	19	3.8346	0.57983
	Female	8	3.3036	0.24670
F6 IEO Innovativeness	Male	19	3.8158	0.65665
	Female	8	3.6250	0.48181
F7 IEO Proactive	Male	19	4.3233	0.72506
	Female	8	4.0714	0.34993
F8 IEO Aggressiveness	Male	19	4.0526	0.91802
	Female	9	2.7407	0.98288
F9 IEO Autonomy	Male	19	4.3421	0.69494
	Female	9	3.5926	1.11215

Table 33: ANOVA for gender groups

		Sum of Squares	df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	3.551	1	3.551	15.123	0.001
	Within Groups	6.106	26	0.235		
F2 Self Innovativeness	Between Groups	0.303	1	0.303	1.577	0.22
	Within Groups	4.998	26	0.192		
F3 Self Proactive	Between Groups	0.025	1	0.025	0.105	0.748
	Within Groups	6.255	26	0.241		
F4 Self Autonomy	Between Groups	0.063	1	0.063	0.08	0.78
	Within Groups	20.477	26	0.788		
F5 IEO Risk Taking	Between Groups	1.587	1	1.587	6.127	0.02
	Within Groups	6.478	25	0.259		
F6 IEO Innovativeness	Between Groups	0.205	1	0.205	0.546	0.467
	Within Groups	9.387	25	0.375		
F7 IEO Proactive	Between Groups	0.357	1	0.357	0.865	0.361
	Within Groups	10.32	25	0.413		
F8 IEO Aggressiveness	Between Groups	10.511	1	10.511	11.935	0.002
	Within Groups	22.898	26	0.881		
F9 IEO Autonomy	Between Groups	3.431	1	3.431	4.799	0.038
	Within Groups	18.588	26	0.715		

5.8.2 Comparing scores by age groups

The ANOVA (F-test) was used to compare the scores among the age groups because there are more than two age groups in the data set. No significant differences were found between the different age groups. See Tables 34 and 35 that follow.

Table 34: Age group descriptive statistics

		N	Mean	Std. Deviation
F1 Self Risk taking	Up to 30	5	3.8	0.46904
	31-40	7	4.3429	0.45774
	41-50	8	4.475	0.86148
	>50	8	4.15	0.33381
F2 Self Innovativeness	Up to 30	5	3.94	0.61887
	31-40	7	4.1571	0.41975
	41-50	8	4.0375	0.43404
	>50	8	3.925	0.4062
F3 Self Proactive	Up to 30	5	3.9111	0.59525
	31-40	7	4.4444	0.37406
	41-50	8	4.1806	0.58776
	>50	8	4.0278	0.28944
F4 Self Autonomy	Up to 30	5	4	0.91287
	31-40	7	4.8095	0.37796
	41-50	8	4.0833	0.93859
	>50	8	3.7083	0.88079
F5 IEO Risk Taking	Up to 30	5	3.5714	0.51508
	31-40	7	3.6327	0.56458
	41-50	8	3.8929	0.60005
	>50	7	3.551	0.57987
F6 IEO Innovativeness	Up to 30	5	3.525	1.1436
	31-40	7	3.8036	0.53937
	41-50	8	3.9531	0.39493
	>50	7	3.6607	0.37993
F7 IEO Proactive	Up to 30	5	4.3143	0.87715
	31-40	7	4.3673	0.50073
	41-50	8	4.2143	0.87398
	>50	7	4.1224	0.29077
F8 IEO Aggressiveness	Up to 30	5	2.8667	1.40633
	31-40	7	3.9048	1.35693
	41-50	8	4.0417	0.91613
	>50	8	3.4583	0.7113
F9 IEO Autonomy	Up to 30	5	3.3333	1.66667
	31-40	7	4.3571	0.63413
	41-50	8	4.5417	0.46076
	>50	8	3.9167	0.50395

Table 35: ANOVA for age groups

		Sum of Squares	df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	1.545	3	0.515	1.524	0.234
	Within Groups	8.112	24	0.338		
	Total	9.657	27			
F2 Self Innovativeness	Between Groups	0.238	3	0.079	0.376	0.771
	Within Groups	5.063	24	0.211		
	Total	5.301	27			
F3 Self Proactive	Between Groups	1.019	3	0.340	1.549	0.228
	Within Groups	5.261	24	0.219		
	Total	6.280	27			
F4 Self Autonomy	Between Groups	4.752	3	1.584	2.408	0.092
	Within Groups	15.788	24	0.658		
	Total	20.540	27			
F5 IEO Risk Taking	Between Groups	0.553	3	0.184	0.565	0.644
	Within Groups	7.512	23	0.327		
	Total	8.065	26			
F6 IEO Innovativeness	Between Groups	0.657	3	0.219	0.564	0.644
	Within Groups	8.935	23	0.388		
	Total	9.591	26			
F7 IEO Proactive	Between Groups	0.241	3	0.080	0.177	0.911
	Within Groups	10.436	23	0.454		
	Total	10.677	26			
F8 IEO Aggressiveness	Between Groups	5.033	3	1.678	1.419	0.262
	Within Groups	28.375	24	1.182		
	Total	33.409	27			
F9 IEO Autonomy	Between Groups	5.231	3	1.744	2.493	0.084
	Within Groups	16.788	24	0.699		

5.8.3 Comparing scores by industry

The scores were also compared by the different industries supported by the government funded incubators. There were no significant differences between the constructs and the different industries. Below is the table for the related means and the ANOVA.

Table 36: Descriptive statistics for industry

		N	Mean	Std. Deviation
F1 Self Risktaking	Technology Incubator (ICT)	6	4.3333	0.77632
	Construction	1	5	
	Manufacturing	6	4.1333	0.27325
	Agriculture (horticulture, floriculture)	2	3.9	0.14142
	Small scale mining & mining beneficiation	4	4	1.00664
	Mixed	9	4.3111	0.50111
	Total	28	4.2286	0.59806
F2 Self Innovativeness	Technology Incubator (ICT)	6	4.0167	0.61779
	Construction	1	3.9	
	Manufacturing	6	3.9667	0.53166
	Agriculture (horticulture, floriculture)	2	3.9	0.56569
	Small scale mining & mining beneficiation	4	3.975	0.40311
	Mixed	9	4.1111	0.35862
F3 Self ProActive	Technology Incubator (ICT)	6	4.0741	0.66913
	Construction	1	4.6667	
	Manufacturing	6	4.0926	0.20387
	Agriculture (horticulture, floriculture)	2	4.2778	0.70711
	Small scale mining & mining beneficiation	4	4.1667	0.34546
	Mixed	9	4.1605	0.57228
F4 Self Autonomy	Technology Incubator (ICT)	6	3.9444	0.92896
	Construction	1	5	
	Manufacturing	6	4.1667	1.13039
	Agriculture (horticulture, floriculture)	2	4.1667	0.70711
	Small scale mining & mining beneficiation	4	4.3333	0.8165
	Mixed	9	4.0741	0.87841
F5 IEO Risk Taking	Technology Incubator (ICT)	5	3.6857	0.69547
	Construction	1	3.7143	

	Manufacturing	6	3.8571	0.43331
	Agriculture (horticulture, floriculture)	2	2.7857	0.30305
	Small scale mining & mining beneficiation	4	3.6429	0.6227
	Mixed	9	3.7619	0.5101
F6 IEO Innovativeness	Technology Incubator (ICT)	5	3.375	1.05327
	Construction	1	4.25	
	Manufacturing	6	3.7292	0.52092
	Agriculture (horticulture, floriculture)	2	3.9375	0.26517
	Small scale mining & mining beneficiation	4	3.9063	0.413
	Mixed	9	3.8333	0.50389
F7 IEO Proactive	Technology Incubator (ICT)	5	4.4	0.91138
	Construction	1	4.2857	
	Manufacturing	6	4.3095	0.63514
	Agriculture (horticulture, floriculture)	2	4.2143	0.30305
	Small scale mining & mining beneficiation	4	4.1071	0.51343
	Mixed	9	4.1905	0.72492
F8 IEO Aggressiveness	Technology Incubator (ICT)	6	3.1111	1.44016
	Construction	1	5	
	Manufacturing	6	3.3333	1.11555
	Agriculture (horticulture, floriculture)	2	4.1667	0.2357
	Small scale mining & mining beneficiation	4	4.1667	1.10554
	Mixed	9	3.6667	0.95743
F9 IEO Autonomy	Technology Incubator (ICT)	6	3.3889	1.58348
	Construction	1	4.1667	
	Manufacturing	6	4.3889	0.62063
	Agriculture (horticulture, floriculture)	2	3.9167	0.11785
	Small scale mining & mining beneficiation	4	4.4167	0.41944
	Mixed	9	4.2778	0.58333

5.8.4 Comparing scores by years by experience

Experience of incubator managers did not seem to have a significant effect on any of the EO components. None of the sig values were below 0.05.

Table 37: Descriptive statistics for comparing scores by experience

		N	Mean	Std. Deviation
F1 Self Risk taking	<5 years	7	3.9143	0.78194
	5-10 years	5	4.12	0.57619
	>10 years	16	4.4	0.47889
F2 Self Innovativeness	<5 years	7	3.9857	0.46701
	5-10 years	5	3.84	0.56833
	>10 years	16	4.0875	0.40476
F3 Self Proactive	<5 years	7	4.1587	0.27108
	5-10 years	5	3.9556	0.64598
	>10 years	16	4.2153	0.51074
F4 Self Autonomy	<5 years	7	4.1905	0.81325
	5-10 years	5	4.5333	0.64979
	>10 years	16	4	0.95839
F5 IEO Risk Taking	<5 years	7	3.6735	0.55766
	5-10 years	5	3.5714	0.53452
	>10 years	15	3.7143	0.59639
F6 IEO Innovativeness	<5 years	7	3.8214	0.6244
	5-10 years	5	3.55	1.07384
	>10 years	15	3.8	0.41133
F7 IEO Proactive	<5 years	7	4.3673	0.58819
	5-10 years	5	4.1714	0.77854
	>10 years	15	4.219	0.65658
F8 IEO Aggressiveness	<5 years	7	3.4286	1.44932
	5-10 years	5	3.2667	1.29957
	>10 years	16	3.8333	0.91084
F9 IEO Autonomy	<5 years	7	4.0238	1.37581
	5-10 years	5	3.7	0.98883
	>10 years	16	4.2604	0.60543

Table 38: ANOVA for comparing scores by experience

		Sum of Squares	df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	1.221	2	0.61	1.808	0.185
	Within Groups	8.437	25	0.337		
F2 Self Innovativeness	Between Groups	0.243	2	0.122	0.601	0.556
	Within Groups	5.058	25	0.202		
F3 Self Proactive	Between Groups	0.257	2	0.129	0.534	0.593
	Within Groups	6.023	25	0.241		
	Total	6.28	27			
F4 Self Autonomy	Between Groups	1.105	2	0.552	0.711	0.501
	Within Groups	19.435	25	0.777		
F5 IEO Risk Taking	Between Groups	0.077	2	0.038	0.115	0.892
	Within Groups	7.988	24	0.333		
F6 IEO Innovativeness	Between Groups	0.271	2	0.135	0.349	0.709
	Within Groups	9.321	24	0.388		
F7 IEO Proactive	Between Groups	0.142	2	0.071	0.161	0.852
	Within Groups	10.536	24	0.439		
F8 IEO Aggressiveness	Between Groups	1.606	2	0.803	0.631	0.54
	Within Groups	31.803	25	1.272		
F9 IEO Autonomy	Between Groups	1.252	2	0.626	0.754	0.481
	Within Groups	20.767	25	0.831		

5.8.5 Comparing scores by level of education

Descriptive statistics show that incubator managers with degrees are more likely to be risk taking than other groups; however, the ANOVA shows that the differences are not significant. Postgraduates scored higher on self-innovativeness while degreed managers scored higher on self-proactiveness and self-autonomy. The ANOVA showed significant differences between self-proactiveness and the managers' level of education; also significant differences exist between incubators' innovativeness and education as both Sig values are below 0.05. A post hoc analysis was therefore performed to determine the area of difference. See Table 19 that follows.

Table 39: Descriptive statistics for level of education

		N	Mean	Std. Deviation
F1 Self Risk taking	Postgraduate	13	4.3385	0.62388
	Degree	4	4.35	0.47258
	Diploma	10	4.06	0.6467
	Matric	1	4	
F2 Self Innovativeness	Postgraduate	13	4.0846	0.41402
	Degree	4	4	0.49666
	Diploma	10	4.04	0.39497
	Matric	1	3	
F3 Self Proactive	Postgraduate	13	4.2137	0.52009
	Degree	4	4.3611	0.33179
	Diploma	10	4.1222	0.31186
	Matric	1	2.8889	
F4 Self Autonomy	Postgraduate	13	3.8718	1.09323
	Degree	4	4.25	0.73912
	Diploma	10	4.5	0.47791
	Matric	1	3.6667	
F5 IEO Risk Taking	Postgraduate	12	3.7381	0.6696
	Degree	4	3.6071	0.62133
	Diploma	10	3.6857	0.42485
	Matric	1	3.1429	
	Total	27	3.6772	0.55695
F6 IEO Innovativeness	Postgraduate	12	3.7917	0.47174
	Degree	4	3.5938	0.6875
	Diploma	10	3.9875	0.3408
	Matric	1	1.75	
F7 IEO Proactive	Postgraduate	12	4.2262	0.7296
	Degree	4	4.2143	0.55328
	Diploma	10	4.4286	0.42592
	Matric	1	2.8571	
F8 IEO Aggressiveness	Postgraduate	13	3.5897	1.32045
	Degree	4	3.5833	1.06719
	Diploma	10	3.8667	0.80431
	Matric	1	2	
F9 IEO Autonomy	Postgraduate	13	4.0128	1.1496
	Degree	4	4.25	0.44096
	Diploma	10	4.3333	0.43744
	Matric	1	2.3333	

Table 40: ANOVA for level of education

		Sum of Squares	df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	0.552	3	0.184	0.485	0.696
	Within Groups	9.105	24	0.379		
	Total	9.657	27			
F2 Self Innovativeness	Between Groups	1.100	3	0.367	2.095	0.127
	Within Groups	4.201	24	0.175		
	Total	5.301	27			
F3 Self Proactive	Between Groups	1.828	3	0.609	3.286	0.038
	Within Groups	4.452	24	0.185		
	Total	6.280	27			
F4 Self Autonomy	Between Groups	2.503	3	0.834	1.110	0.364
	Within Groups	18.036	24	0.752		
	Total	20.540	27			
F5 IEO Risk Taking	Between Groups	0.350	3	0.117	0.348	0.791
	Within Groups	7.715	23	0.335		
	Total	8.065	26			
F6 IEO Innovativeness	Between Groups	4.680	3	1.560	7.306	0.001
	Within Groups	4.911	23	0.214		
	Total	9.591	26			
F7 IEO Proactive	Between Groups	2.271	3	0.757	2.071	0.132
	Within Groups	8.406	23	0.365		
	Total	10.677	26			
F8 IEO Aggressiveness	Between Groups	3.247	3	1.082	0.861	0.475
	Within Groups	30.162	24	1.257		
	Total	33.409	27			
F9 IEO Autonomy	Between Groups	3.854	3	1.285	1.698	0.194
	Within Groups	18.165	24	0.757		
	Total	22.019	27			

5.8.6 Comparing scores by accolades

Managers whose incubators received accolades in the enterprise development community scored a higher mean on self-proactivity. The ANOVA showed a significant difference between self-proactivity and whether the incubator has received accolades.

Table 41: Descriptive statistics for accolades

		N	Mean	Std. Deviation
F1 Self Risk taking	Yes	11	4.4182	0.43317
	No	15	4.16	0.66847
F2 Self Innovativeness	Yes	11	4.1364	0.38019
	No	15	3.9067	0.49493
F3 Self Proactive	Yes	11	4.3939	0.34198
	No	15	3.9333	0.49655
F4 Self Autonomy	Yes	11	4.1212	0.95769
	No	15	4.2	0.7746
F5 IEO Risk Taking	Yes	11	3.6623	0.53936
	No	14	3.7245	0.59686
F6 IEO Innovativeness	Yes	11	3.8068	0.45195
	No	14	3.7857	0.72958
F7 IEO Proactive	Yes	11	4.3117	0.39289
	No	14	4.2143	0.83252
F8 IEO Aggressiveness	Yes	11	3.8788	1.06742
	No	15	3.5333	0.94112
F9 IEO Autonomy	Yes	11	4.1515	0.52944
	No	15	4.2556	0.80885

Table 42: ANOVA for accolades

		Sum of Squares	df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	0.423	1	0.423	1.248	0.275
	Within Groups	8.132	24	0.339		
F2 Self Innovativeness	Between Groups	0.335	1	0.335	1.648	0.211
	Within Groups	4.875	24	0.203		
F3 Self Proactive	Between Groups	1.346	1	1.346	6.992	0.014
	Within Groups	4.621	24	0.193		
	Total	5.968	25			
F4 Self Autonomy	Between Groups	0.039	1	0.039	0.054	0.819
	Within Groups	17.572	24	0.732		
F5 IEO Risk Taking	Between Groups	0.024	1	0.024	0.073	0.79
	Within Groups	7.54	23	0.328		
F6 IEO Innovativeness	Between Groups	0.003	1	0.003	0.007	0.934
	Within Groups	8.962	23	0.39		
F7 IEO Proactive	Between Groups	0.058	1	0.058	0.127	0.724
	Within Groups	10.554	23	0.459		
F8 IEO Aggressiveness	Between Groups	0.757	1	0.757	0.764	0.391
	Within Groups	23.794	24	0.991		
F9 IEO Autonomy	Between Groups	0.069	1	0.069	0.138	0.714
	Within Groups	11.962	24	0.498		

5.8.7 Comparing scores by how many graduates continued to exist after incubation

It appears as if the components of EO have no significant effect on sustainability of incubated businesses after graduation. See Table 43. However, the ANOVA shows that at 10% level of significance, incubator risk taking influences the sustainability of incubated businesses after graduation. The higher the risk the fewer the graduates who continue to exist. See Table 44.

Table 43: Descriptive statistics for how many graduates continued to exist after incubation

		N	Mean	Std. Deviation
F1 Self Risk taking	0-2	7	4.2857	0.5757
	2-5	12	4.3167	0.45494
	>5	9	4.0667	0.79373
F2 Self Innovativeness	0-2	7	4.0429	0.38668
	2-5	12	4.0167	0.54076
	>5	9	4	0.38406
F3 Self Proactive	0-2	7	4.0952	0.21687
	2-5	12	4.1759	0.58114
	>5	9	4.1728	0.53029
F4 Self Autonomy	0-2	7	4.3333	0.60858
	2-5	12	4.3056	0.70293
	>5	9	3.7778	1.17851
F5 IEO Risk Taking	0-2	7	3.898	0.4929
	2-5	11	3.4026	0.54142
	>5	9	3.8413	0.53186
F6 IEO Innovativeness	0-2	7	4.0179	0.52256
	2-5	11	3.5909	0.73547
	>5	9	3.7639	0.46956
F7 IEO Proactive	0-2	7	4.4694	0.4342
	2-5	11	4.2468	0.67941
	>5	9	4.0794	0.73579
F8 IEO Aggressiveness	0-2	7	3.4762	0.97861
	2-5	12	3.5278	1.00963
	>5	9	3.8889	1.39443
F9 IEO Autonomy	0-2	7	4.1905	0.63413
	2-5	12	4.1111	0.82061
	>5	9	4.0185	1.22883

Table 44: ANOVA for how many graduates continued to exist after incubation

		Sum of Squares	Df	Mean Square	F	Sig.
F1 Self Risk taking	Between Groups	0.352	2	0.176	0.473	0.629
	Within Groups	9.305	25	0.372		
F2 Self Innovativeness	Between Groups	0.007	2	0.004	0.017	0.983
	Within Groups	5.294	25	0.212		
F3 Self Proactive	Between Groups	0.033	2	0.017	0.066	0.936
	Within Groups	6.247	25	0.25		
F4 Self Autonomy	Between Groups	1.771	2	0.886	1.18	0.324
	Within Groups	18.769	25	0.751		
F5 IEO Risk Taking	Between Groups	1.413	2	0.706	2.549	0.099
	Within Groups	6.652	24	0.277		
F6 IEO Innovativeness	Between Groups	0.78	2	0.39	1.062	0.361
	Within Groups	8.811	24	0.367		
F7 IEO Proactive	Between Groups	0.599	2	0.3	0.713	0.5
	Within Groups	10.078	24	0.42		
F8 IEO Aggressiveness	Between Groups	0.894	2	0.447	0.344	0.712
	Within Groups	32.515	25	1.301		
F9 IEO Autonomy	Between Groups	0.118	2	0.059	0.068	0.935
	Within Groups	21.9	25	0.876		

5.9 Relationship between the scores for the individual entrepreneurial orientation constructs

The correlation coefficients were calculated between the different variables and the individual managers' entrepreneurial constructs. The correlation coefficient measures the strength and direction of a linear relationship between two variables. The sig value indicates whether there is a statistically significant correlation between the variables. If Sig is below 0.05 the correlation is significant.

- Self-risk taking – Most of the variables had a positive relationship with the individual managers' risk taking construct. However, profitability and turnover growth related negatively with the construct. All the correlations are, however, not statistically significant as none are below 0.05.
- Self-innovativeness – Regarding innovativeness, most relationships are positive; however, there is a negative relationship between innovativeness of managers' profitability. All the correlations are, however, not statistically significant as none are below 0.05.
- Self-proactive – a moderate positive relationship exists between pro-activeness of managers and the number of employees in the incubator. All other relationships are positive; however, they are skewed towards weak relationships. All the correlations are, however, not statistically significant as none are below 0.05.
- Self-autonomy – the construct is negatively correlated with the number of managers in an organisation and assistance towards access to finance.

Table 45: Correlations between the scores for the individual entrepreneurial orientation constructs

			F1 Self Risktaking	F2 Self Innovative ness	F3 Self ProActive	F4 Self Autonomy
Spearman's rho	How many employees in the organisation, approximately?	Correlation Coefficient	0.234	0.268	0.421	0.172
		Sig. (2-tailed)	0.230	0.167	0.026	0.380
	How many managers are in the organisation?	Correlation Coefficient	0.133	0.251	0.340	-0.007
		Sig. (2-tailed)	0.500	0.198	0.076	0.971
	Average grant received from the Department of Trade and Industry per annum.	Correlation Coefficient	0.033	0.074	0.170	0.177
		Sig. (2-tailed)	0.878	0.732	0.427	0.409
	On average how many jobs have been created by the incubatees during the incubation program?	Correlation Coefficient	0.143	0.091	0.183	0.077
		Sig. (2-tailed)	0.450	0.634	0.333	0.687
	Approximately what is the average growth in profitability of incubatees from joining of incubator to graduation?	Correlation Coefficient	-0.045	0.193	0.322	0.210
		Sig. (2-tailed)	0.821	0.324	0.094	0.284
		N	28	28	28	28
	Approximately what is the average turnover growth of incubatees from joining of incubator to graduation?	Correlation Coefficient	-0.157	-0.015	0.293	0.089
		Sig. (2-tailed)	0.407	0.938	0.116	0.639
	On average what percentage of incubatees per annum has the incubator managed to assist regarding access to finance?	Correlation Coefficient	0.259	0.280	0.235	-0.020
		Sig. (2-tailed)	0.183	0.149	0.228	0.918

5.10 Relationship between the scores for the incubator entrepreneurial orientation constructs

Correlation coefficients were also calculated at the level of the EO of the incubator itself.

- Incubator risk taking – Most of the correlations were weak positive relationships; however, number of jobs created and profitability negatively correlated with risk taking. No relationship was of statistical significance as no sig was below 0.05.
- Incubator innovativeness – Although correlations were positive, they were mostly weak as they ranged from 0.248 to 0.046 thus signifying a weak positive relationship. Number of jobs created negatively correlated with the innovativeness of the incubator. Therefore, there was no relationship between number of jobs created and innovativeness of incubator. Also, no relationship was of statistical significance.
- Incubator proactiveness – Relationships were mostly positive; however, they were weak. Grants received and number of jobs created negatively correlated with proactiveness at incubator level. No relationship was of statistical significance.
- Aggressiveness – Number of employees, number of managers and turnover had the highest correlation with the construct; however, the relationship could be termed moderate. No relationship was of statistical significance.
- Autonomy – Number of employees in the organisation and incubators' assistance with access to finance had the highest correlations; however, the relationship was moderate. Number of jobs created negatively correlated with the construct.

Table 46: Correlations between the scores for the incubator entrepreneurial orientation constructs

			F5 IEO Risk Taking 0.193	F6 IEO Innovativ eness 0.143	F7 IEO Pro Active 0.224	F8 IEO Aggresiven ess 0.389	F9 IEO Autono my 0.335
Spear man's rho	How many employees in the organisation, approximately ?	Correla tion Coeffici ent					
		Sig. (2- tailed)	0.334	0.476	0.262	0.041	0.082
	How many managers are in the organisation?	Correla tion Coeffici ent	0.204	0.104	0.103	0.313	0.127
		Sig. (2- tailed)	0.307	0.606	0.611	0.105	0.519
	Average grant received from the Department of Trade and Industry per annum.	Correla tion Coeffici ent	0.051	0.046	-0.113	0.098	0.222
		Sig. (2- tailed)	0.818	0.833	0.608	0.648	0.297
	On average how many jobs have been created by the incubatees during the incubation programme?	Correla tion Coeffici ent	-0.138	0.108	0.030	0.303	-0.037
		Sig. (2- tailed)	0.466	0.572	0.874	0.103	0.845
	Approximately what is the average growth in profitability of incubatees from joining of incubator to graduation?	Correla tion Coeffici ent	-0.115	0.129	0.076	0.224	0.090
		Sig. (2- tailed)	0.569	0.521	0.705	0.251	0.650
	Approximately what is the average turnover growth of incubatees from joining of incubator to graduation?	Correla tion Coeffici ent	0.070	0.308	0.135	0.235	0.051
		Sig. (2- tailed)	0.712	0.097	0.477	0.211	0.790
	On average what percentage of incubatees per annum has the incubator managed to assist regarding access to finance?	Correla tion Coeffici ent	0.345	0.248	0.109	0.234	0.360
		Sig. (2- tailed)	0.078	0.211	0.589	0.231	0.060

5.11 Relationships between the constructs

Table 47: Correlations between the constructs

		F1_Self_Risk taking	F2_Self_Innovative ness	F3_Self_Pro Active	F4_Self_Autonomy	F5_IEO_Risk Taking	F6_IEO_Innovative ness	F7_IEO_Pro Active	F8_IEO_Aggressiveness	F9_IEO_Autonomy
F1_Self_Risktaking	Pearson Correlation	1	.484**	.375*	.418*	.581**	0.311	.470*	.562**	.532**
	Sig. (2-tailed)		0.009	0.049	0.027	0.001	0.114	0.013	0.002	0.004
F2_Self_Innovative ness	Pearson Correlation	.484**	1	.637**	0.354	.506**	.401*	.640**	.550**	.393*
	Sig. (2-tailed)	0.009		0.000	0.064	0.007	0.038	0.000	0.002	0.038
F3_Self_ProActive	Pearson Correlation	.375*	.637**	1	.575**	0.171	.454*	.689**	.540**	0.265
	Sig. (2-tailed)	0.049	0.000		0.001	0.393	0.017	0.000	0.003	0.173
F4_Self_Autonomy	Pearson Correlation	.418*	0.354	.575**	1	0.183	.435*	.581**	.536**	.493**
	Sig. (2-tailed)	0.027	0.064	0.001		0.361	0.023	0.001	0.003	0.008
F5_IEO_Risk Taking	Pearson Correlation	.581**	.506**	0.171	0.183	1	.387*	0.297	.507**	.537**
	Sig. (2-tailed)	0.001	0.007	0.393	0.361		0.046	0.132	0.007	0.004
F6_IEO_Innovative ness	Pearson Correlation	0.311	.401*	.454*	.435*	.387*	1	.693**	.635**	.547**
	Sig. (2-tailed)	0.114	0.038	0.017	0.023	0.046		0.000	0.000	0.003
F7_IEO_ProActive	Pearson Correlation	.470*	.640**	.689**	.581**	0.297	.693**	1	.527**	0.302
	Sig. (2-tailed)	0.013	0.000	0.000	0.001	0.132	0.000		0.005	0.126
F8_IEO_Aggressiveness	Pearson Correlation	.562**	.550**	.540**	.536**	.507**	.635**	.527**	1	.667**
	Sig. (2-tailed)	0.002	0.002	0.003	0.003	0.007	0.000	0.005		0.000
	N	28	28	28	28	27	27	27	28	28
F9_IEO_Autonomy	Pearson Correlation	.532**	.393*	0.265	.493**	.537**	.547**	0.302	.667**	1
	Sig. (2-tailed)	0.004	0.038	0.173	0.008	0.004	0.003	0.126	0.000	

Most of the constructs correlated highly positively and the relationships were significant. There were no negative correlations i.e. all constructs increased with each other; however, some relationships were weaker than others. Strongest relationships appeared between Self innovation and Proactiveness with a correlation of 0.64, Self-proactiveness and Incubator proactiveness with a correlation of 0.689, Self-risk taking and IEO risk taking with a correlation of 0.581 at 1% significant level. Incubator autonomy was also highly correlated with incubator aggressiveness at 1% significant level. All these relationships were significant as they all had a sig of below 0.05.

Weak positively correlated relationships existed between self-proactive and risk taking, incubator innovativeness and self-risk taking, innovativeness and autonomy, incubator autonomy and innovativeness. The weakest relationship was between self-proactiveness and incubator risk taking.

Results for hypothesis test 1

Null hypothesis 1: EO constructs do not contribute to the performance of government funded incubators.

Alternate hypothesis 1: EO constructs contribute to the performance of government funded incubators.

Table 48: Correlation for Hypothesis 1

		F1_SELF_ RiskTaking	F2_SELF_ Innovative	F3_SELF_ Proactive	F4_SELF_ Autonomy	F5_IEO_ Risktaking	F6_IEO_ Innovative	F7_IEO_ Proactive	F8_IEO_ Aggressiveness	F9_IEO_ Autonomy
Jobs created	Pearson Correlation	0.143	0.091	0.183	0.077	-0.138	0.108	0.030	0.303	-0.037
	Sig. (2-tailed)	0.450	0.634	0.333	0.687	0.466	0.572	0.874	0.103	0.845
Average turnover growth	Pearson Correlation	-0.157	-0.015	0.293	0.089	0.070	0.308	0.135	0.235	0.051
	Sig. (2-tailed)	0.407	0.938	0.116	0.639	0.712	0.097	0.477	0.211	0.790
Incubatees survival after graduation	Pearson Correlation	0.235	0.277	-0.042	-0.106	0.334	0.226	-0.027	0.197	0.343
	Sig. (2-tailed)	0.229	0.154	0.830	0.591	0.083	0.248	0.893	0.315	0.074

Coefficient summary

- Jobs created – generally a weak positive relationship could be identified except for two components of the EO construct i.e. Incubator risk taking and incubator autonomy which signify that there was a weak negative correlation with job creation. None of the relationships were significant.

- Turnover growth – the variable also had a weak positive relationship with most components except self-risk taking and self-innovativeness. The relationships were not significant.
- Incubatees survival rate – this variable weakly correlates with self-risk taking, self-innovativeness and incubator aggressiveness and moderately correlated with incubator risk taking and incubator autonomy. Proactivity negatively correlated with survival of incubatees at both levels i.e. managers level and incubator level.

Results for hypothesis test 2

The relationship between the individual and organisational or incubator EO correlated highly and was significant whilst the relationship between the constructs (i.e. EO at both levels) negatively correlated with performance.

Table 49: Correlations for Hypothesis 2

			OE_Ind_Avg	EO_org_avg	Perf_Avg
Spearman's rho	OE_Ind_Avg	Correlation Coefficient	1.000	.671**	-.030
		Sig. (2-tailed)	.	.000	.881
		N	27	27	27
	EO_org_avg	Correlation Coefficient	.671**	1.000	-.040
		Sig. (2-tailed)	.000	.	.842
		N	27	27	27
	Perf_Avg	Correlation Coefficient	-.030	-.040	1.000
		Sig. (2-tailed)	.881	.842	.
		N	27	27	27

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

The results show that EO at both levels did not highly correlate with the performance measures set by the researcher of (i) jobs created,

(ii) turnover growth, and (iii) survival rate of incubatees in the post-incubation period. However, the relationship between the construct at individual level and at incubator level correlated highly.

5.12 Summary of Relationships

A summary of the relationships explored in this chapter can be found in the table below.

Table 50: Summary of Relationships

Summary of relationships		
Performance Measures	Average Correlations Individual EO	Average Correlations Incubator EO
Jobs created	Weak positive	Weak positive
Average turnover growth	Weak negative	Weak positive
Incubatees survival after graduation	Weak positive	Moderate positive
Significant relationships		
	Incubator innovativeness and turnover growth	
	Incubator risk taking and survival rate	
	Incubator autonomy and survival rate	

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

This chapter summarises the outcomes of the quantitative research. Although literature is awash with studies which have empirically proven that higher levels of EO contribute to performance, the application of EO in the incubating space has not been tested. The aim of the research was to determine the impact of EO in government funded incubators at both the level of the manager and the level of the incubator. However, a gap exists in the literature regarding the extent to which the EO of managers and EO incubators themselves contribute to or impact on effective incubation and performance. Both Drucker and Lewis placed significant value on the manager as a critical factor in the success of an incubator, hence the assessment of EO at the managers level as well. The testing of EO at individual level is still very nascent in research with limited literature to back it up. However, Buys and Mbewana (2007) cited the importance of management as a success factor in the incubation process.

The objective of the questionnaire developed for this research was to obtain an understanding of EO by measuring the five constructs: (i) risk taking, (ii) autonomy, (iii) proactiveness, (iv) innovativeness, and (v) aggressiveness at both manager level and incubator level.

For purposes of analysis, the rating questions in the Likert scale questionnaire were divided according to the EO constructs to the research propositions. The questions were measured from 1 to 4 with 1 = Strongly disagree, 2 = Disagree, 3 = Agree and 4 = Strongly agree. The dimensions of EO measured are illustrated below.

6.2 Impact of Managers' Demographics on EO

The age and experience of the respondents did seem to have an increased impact on EO; however certain traits were noticed by the researcher. The bulk of the managers were above 41 years old and possessed more than ten years' experience in the incubating sector. However, as noticed in the results, this did not alter their EO abilities i.e. older and more experienced managers did not have an advantage over younger managers in terms of EO abilities. This can stem from the fact that individual level entrepreneurship behaviours are affected by other factors such as societal cultural practices and mindset i.e. entrepreneurial intentions and not necessarily gained by years

of experience (Autio, Pathak, & Wennberg, 2013). Entrepreneurial behaviours linked to EO cannot therefore be understood without placing attention on the context in which behaviours are operating. In this research, the context is government funded incubator managers who operate in a highly regulated environment which has a possibility of stifling some of the EO components such as autonomy-activeness and risk taking.

Gender was found to influence certain components of the constructs e.g. risk taking and aggression. Female managers were found to be less risk-taking than male managers; however, on other components of the construct i.e. proactiveness, innovativeness and autonomy, females did not differ significantly from their male counterparts. Širec and Močnik (2012) concluded that diverse factors affect individual entrepreneurship i.e. psychological factors, non-psychological factors and locus of control. With regard to females, the conclusion was that females are more complex and diverse than males thereby impacting EO abilities e.g. lower risk tolerance. Policy makers are tasked with providing a supportive environment through supportive programmes, education and training of female incubator managers.

The qualifications of managers provided an interesting view point. Managers with diplomas and degrees scored higher on some EO components, such as innovativeness and proactiveness, than matric and post graduate managers. It appeared to the researcher that more education and little education could have an effect on EO abilities and the relationship between education and EO may not be a linear relationship. This, however, may need to be tested in future in separate research. The sub-section below discusses the results in terms of individuals' entrepreneurial intentions and psychological and non-psychological factors which could impact on the EO of incubator managers.

6.3 Demographics – Government funded incubator

The size of government funded incubators under management varied between small (with below 10 incubatees) to large (with over 20 incubates). Of interest was the latter group, which comprised 73% of the respondents. Interesting to note is the fact that there was no significant difference between the number of incubatees an incubator managed with its EO abilities. At individual level managers were not affected as well. Each incubator has an average of 17 employees and an average of three other departmental managers. There was a general spread in the sector in which the incubators operate as seen in the table below. However, most of the incubators have a mixed portfolio of incubatees. The mixed portfolio may have an impact on the incubator managers specialist abilities, thus in turn affecting performance.

The incubators receive a government grant from SEDA on an annual basis; some respondents claimed the grants ranged from a minimum of R1.2 million to a maximum of R3 million per annum.

The researcher also assessed the incubators on number of accolades received in the enterprise development sector. About 30% of the incubators assessed received accolades ranging from DBSD awards to Innovation awards. The ANOVA showed that incubators with accolades scored higher on individual managers proactivity as there was a significant difference. This helped the researcher to see whether certain components of the EO construct were more important than others for certain incubation aspects.

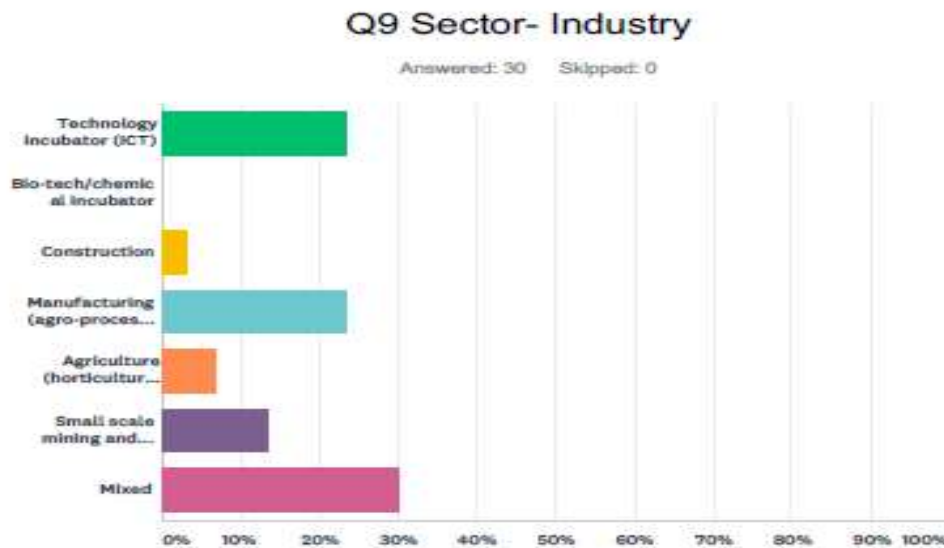


Figure 11: Analysis of respondents per sector

6.3 Entrepreneurial Orientation Performance Measures

The success of the individual incubatees under management was assessed based on the number of job created whilst in incubation, turnover growth and the survival rate post incubation (years of existence post incubation).

EO components' relationships with performance

The researcher anticipated that higher EO at both managers' level and incubator level would contribute to increased performance which was measured in terms of growth turnover, number of jobs created by the incubated business and survival rate of incubatees after graduation.

6.3.1 Risk taking

- **Number of jobs created** – The results indicated that there was a weak positive relationship between managers' risk taking and number of jobs created (correlation coefficient 0.143). As managers' risk taking increases, the number of jobs created slightly increases. The relationship is however insignificant as the sig value is not below 0.05. At incubator level, a weak negative correlation existed with number of jobs created.
- **Growth in turnover** – There was also a weak negative relationship between managers' risk and growth in turnover with a correlation coefficient of -0.157. The more risks the incubator manager takes, the lesser growth in turnover of incubated businesses. The relationship is however insignificant. However, at incubator level there was a weak positive relationship.
- **Survival rate** – A weak positive relationship existed between managers' risk taking and survival rate of incubated businesses with a correlation coefficient of 0.235. The relationship was moderately positive at the level of incubator risk taking.

The results of the study are divergent to the normal view of previous literature; however according to Kreiser and Davis (2010), risk taking can have a curvilinear relationship with performance as risk taking can only have a positive effect to a certain extent, beyond which risk taking can actually have a negative effect on performance. On the incubator level, risk-taking of the incubator showed a negative relationship with the variable of number of jobs created which can be explained by the existence of a curvilinear relationship to risk taking. Therefore although the descriptive statistics showed high means for managers and incubator risk taking, this has not translated in high performance in terms of number of jobs created. Kreiser and Davis (2010) believe that moderate risk-taking firms and managers can outperform high risk-taking ones. This is because moderate risk takers are more likely to spend more time studying available opportunities before committing large amounts of resources.

Although individual EO is important, as noted in Chapter Five, all the significant relationships were between the incubator's EO profile and performance measures. It therefore seems more impactful to build EO abilities at incubator level through malleable organisational structures and enhancing other internal processes of the incubator.

6.3.2 Innovativeness

- **Number of jobs created** – The results indicated that there was a weak positive relationship between managers' innovativeness and number of jobs created (correlation coefficient 0.091). As incubator managers' innovativeness increases, number of jobs created slightly increase. The relationship was however insignificant. The same picture emerged at the incubator level i.e. a weak positive relationship of 0.108.
- **Growth in turnover** – A weak negative relationship existed between managers' innovativeness and growth in turnover with a correlation coefficient of -0.105. The more innovative the incubator manager, the less growth in turnover was realised by the incubatees. However, on the incubator level, incubator innovativeness has a moderate positive relationship with growth in turnover.
- **Survival rate** – The relationship between managers innovativeness was a weak positive relationship with a correlation of 0.277, thus the increase in incubator managers resulted in a small increase in profitability. The relationship was also positive at the incubator level.

As noted in Chapter Two, innovativeness assists with survival in competitive environments, particularly technological environments. Generally, literature expects a positive relationship with performance. Overall, this relationship mimics the belief of literature; thus, although the positive relationships were weak there was increased performance. Kreiser and Davis (2010) expected high innovativeness to associate with performance in a positive manner. What stood out was the different effects of innovativeness on the different performance measures. Turnover growth covary at managers level and at incubator level i.e. the components may have different results at different levels.

6.3.3 Proactiveness

- **Number of jobs created** – The results indicated that there was a weak positive relationship between managers' proactiveness and number of jobs created (correlation coefficient 0.183). As incubator managers' proactiveness increased, number of jobs created slightly increased and the relationship was insignificant. At incubator level, the association was also a weak positive relationship with a coefficient of 0.030.
- **Growth in turnover**– A slightly moderate positive relationship existed between managers' proactiveness and growth in turnover with a correlation coefficient of

0.293. The more proactive the incubator manager, the more growth in turnover was realised by the incubatees business on a moderate scale. At incubator level, turnover growth also weakly correlated in a positive way.

- **Survival rate** – The relationship between managers proactiveness with survival rate was a weak negative relationship at both manager and incubator level.

Except for survival rate, number of jobs created and turnover growth correlated positively with the EO component of proactiveness.

6.3.4 Autonomy

- **Number of jobs created** – The results indicated that there was a weak positive relationship between managers' autonomy and number of jobs created (correlation coefficient 0.077). However, at incubator level a negative relationship existed of - 0.037.
- **Growth in turnover** – A weak positive relationship existed between managers' autonomy and growth in turnover with a correlation coefficient of 0.0.89. The more proactive the incubator manager, the more growth in turnover was realised by the incubatees business on a smaller scale. The relationship moved in the same direction at incubator level.
- **Survival rate** – The relationship between managers' autonomy is a weak negative relationship with a correlation of -0.106 while a positive relationship at incubator level existed.

Overall, autonomy associated positively with the performance measures. Differences were sometimes seen between components at the two levels of analysis i.e. individual manager EO and incubator EO.

6.3.5 Incubator aggressiveness

- **Number of jobs created** – The results indicated that there was a moderate positive relationship between the incubators' proactiveness and number of jobs created (correlation coefficient 0.303).
- **Growth in turnover** – A slightly moderate positive relationship existed between the incubators' innovativeness and growth in turnover with a correlation coefficient of 0.235. The more the incubator took risks, the lower growth in turnover was realised by the incubatees' business on a smaller scale.

- **Survival rate** –The relationship between incubator innovativeness and profitability was a weak positive relationship with a correlation coefficient of 0.197; thus as the incubator's aggressiveness increased, so did survival rate of incubatees post incubation.

6.4 Discussion

The findings bring an interesting angle to the discussion as it is generally propositioned by literature that increase in EO results in increased performance (Kantur, 2016). However EO is widely recognised as a firm level construct (Koe, 2016). The measuring of EO at individual level is nascent; however, it can be deemed critical to entrepreneurship research. Individuals' entrepreneurial abilities are affected by many other factors such as education and the entrepreneurial spirit which is moderated by an individual locus of control (Koe, 2016).

As noted above, the age, experience and qualifications of individual managers did not have any significant relationships with EO thus building on the premise that entrepreneurial behaviour is moderated and driven by an individual locus of control which differs from person to person. On the other hand, in other studies, students who had taken an entrepreneurship course improved their creativity and innovation levels. The question then is if managers of government funded incubators get further training in their entrepreneurial abilities will that impact on the performance of government funded incubators?

As noted in the individual managers section, there was no relationship between EO at incubator level and performance of government funded incubators. According to Magaji et al. 2015), although the relationship between EO and performance is well theorised in a handful of situations, the relationship could not be empirically tested. The variance in the direction of the relationship indicated the strength of the contextual factor (Solomon, 2017). There are therefore internal and external contingent factors that have an effect on this relationship. Therefore, context matters in such situations. The context of this research is government funded incubators in South Africa which significantly alters the relationship as various other factors were noted to contribute to performance of such entities.

Jantunen (2005) further intimated that EO alone cannot build a competitive advantage;

however, the dynamic capabilities of an organisation are key in realising the advantages of a high EO. Dynamic capabilities refer to the ability of organisations to utilise their assets, processes and structures to enable them to sense and seize new opportunities i.e. the ability to orchestrate change and organise efficiently. In other words, a high EO is not adequate without the organisational processes in place allowing the organisation to utilise EO in a way that improves performance. Processes and structures of government incubators therefore become critical as they allow the incubator to convert high EO into improved performance.

What would be interesting to compare is how the relationship between EO and performance plays out in privately funded incubators. The difference of such processes and structures (if any) could be the key required to unlock the potential of government funded incubators.

The environment also plays an important role in moderating the relationship between EO and performance. Kreiser and Davis (2010) suggested that there were physical and social factors that managers and organisations may consider during decision making processes. The environment could therefore be the cause of mixed relations between EO components and performance particularly environmental dynamism and munificence. Dynamism relates to the rates at which an industry changes or innovates whilst munificence relates to availability of resources and opportunities. Technology based incubators could be greatly affected by the dynamism factor as the environment is constantly changing so that by the time the three-year incubation period is completed, the incubatees' business supported by the incubator could have been rendered obsolete. In such circumstances, innovativeness and proactiveness of both the manager and the incubator become critical in continuously analysing the environment to align incubatees to the continuously changing environment.

On the other hand, environmental munificence which speaks to availability of resources is also key, particularly in the incubator sector. Funding is important as it enables the supported incubatees to exploit existing opportunities in the market. Although government funding is provided through SEDA, the highest incubator received approximately R3 million according to the questionnaire responses and on average incubators support approximately 20 incubatees at a given time. The resources are therefore stretched, and incubating organisations may need to seek alternative funding mechanisms outside of existing government grants so as to gain the benefits of high EO.

Organisational structure also plays a role regarding stimulating EO (Lumpkin & Dess, 1996). The general view is that decentralised and less hierarchical structures are an enabling environment for some of the components of EO such as innovativeness, autonomy and proactivity. Contrastingly highly mechanical structures work towards stifling the same components. Various researchers have argued that organisational structure does have an impact on both EO and performance (Kreiser & Davis, 2010). Incubators can benefit by aligning their structures to supporting of EO. Government organisations are generally viewed as mechanistic, formal and vesting of authority in positions rather than situational expertise.

Other factors that play a role include:

- Geographical location – Due to the government’s need to drive inclusive economic growth, some of the incubators are in rural areas of South Africa which may not perform economically on the same scale with incubators housed in Gauteng.
- Incubatees selection process – According to Theodorakopoulos et al. (2014), the incubatees’ selection process is a critical factor in driving success and performance of incubators. Careful screening and selection of business plans plays a huge role. In this particular context of government funded incubators, the drive for inclusive economic growth may supersede the need for careful screening of incubatees which in turn may affect the performance measures of this paper even though EO is high. Quality of entrepreneurs is also cited by Masutha and Rogerson (2015) as a key factor.
- The incubating model – The current SEDA incubating model covers three years in incubation before graduation and offers both shared spaces and virtual incubation.
- Funding mechanisms – Incubation requires ability to raise capital so that the incubator can provide various services to incubatees such as tax consultants, marketers, lawyers etc. Access to low cost funding such as government grants and venture capital is important (Buys & Mbewana, 2007). Masutha & Rogerson (2015) compared three government funded incubators (Soft start, BTI and Furntech) and two privately funded incubators (Shanduka Black Umbrellas and Aurik), A major finding was that the difference in the types of funding had an effect on performance as funders seek to see results. Although governments grants are important and cannot be done away with, a mix of funding structures could be ideal towards driving performance.
- Stakeholder support – clarity, consistency and cooperation from stakeholders is important particularly the government and the local business community.

- Government policy is key – Recently, the South African government created a stand-alone Department of Small Business Development(DBSD) which is a step in the right direction towards offering more support to entrepreneurs.
- Networks development – As noted in Chapter Two, the development of networks is one key performance area for incubators (Schwartz and Gothner, 2009). Inter organisational collaboration is a key component of the incubation process. The researcher believes that EO abilities at manager level are able to drive networking and collaboration activities.

6.5 Conclusion

Incubation in South Africa is still at an early stage and the relationships being studied in this research may need to be tested over a much longer period and the development of EO abilities to improve performance may need to be done in the context of the South African environment and government incubators. The general business environment where incubators are operating has taken a downward trajectory which could also affect performance of incubators in terms of revenue growth, job creation and survival rate of incubatees. Besides EO, there are a myriad of other factors which can therefore impact on performance of incubators. The relationship is therefore extremely contextual and as shown by the results, improvement of incubator performance may need to be looked at together with other environmental factors. Building EO abilities at both an individual and incubator level should be prioritised as in other mature environments, the construct has driven performance.

CHAPTER 7: CONCLUSION

7.1 Introduction

Chapter One of this research explained the research problem as well as the behind the research. Chapter Two considered the relevant previous theory regarding EO and incubator models leading to the formulation of research questions in Chapter Three. Chapter Four set out the research methodology while Chapter Five presented the results which were analysed in Chapter Six. This chapter aims to draw conclusions and set out areas of future research.

7.2 Review of research

The study intended to determine whether high EO abilities had an effect on performance. EO has been widely accepted by previous research as a driver of performance in various other environments. However, the effect on EO on incubators, particularly government funded, has not been investigated.

The research utilised a quantitative and descriptive approach with the aim of determining the presence of a correlation between three variables: (i) EO of managers of government funded incubators, (ii) EO of incubator houses and performance (measured as (a) number of jobs created by incubatees businesses during incubation, (b) turnover growth of incubated businesses during incubation), and (iii) survival rate of incubatees post incubation.

A questionnaire was used to collect primary data and statistical tests were performed (i.e. descriptive tests and correlation coefficients) to establish whether strong relationships existed.

7.3 Research findings

The researcher believes the results provide important insights in the incubating sector in South Africa, particularly towards development of EO abilities of managers and to have a government funded incubator adopt a strategic intent of high EO.

Findings are summarised below:

Research Question 1

To what extent does the EO construct contribute to effective incubation or performance of government funded incubators in terms of:

- (a) Number of jobs created by incubatees businesses during incubations;
- (b) Growth of turnover for incubatees businesses; and
- (c) Survival rate of incubatees post-incubation.

Below are the key findings:

- On average, a weak positive relationship existed between most EO components at both incubator level and manager level. Higher risk taking resulted in lower performance in terms of turnover growth. Both managers' EO abilities and incubator EO abilities had high means; however, this did not translate to significant improvements in the number of jobs created by incubatees during the period of incubation, increase in turnover and survival rate of incubatees post-graduation.
- A correlation existed, significant at 1%, between incubator innovativeness and growth in turnover, incubator risk taking and survival of incubatees business post-graduation and autonomy and survival rate.

Research Question 2

Does EO at individual managers level and EO at organisation or incubator level have a relationship?

Below are the key findings:

- The relationship between the individual managers EO and the incubator EO highly correlates overall and is significant however negatively it correlates with performance.

Other findings

Some EO components were found to be sensitive to gender i.e. female managers were less tolerant of risk taking. Educational qualifications of managers affected their innovativeness and the incubators' innovativeness as well. Managers with a degree qualification were found to be more innovative than managers with either post graduate qualifications, diplomas or matric.

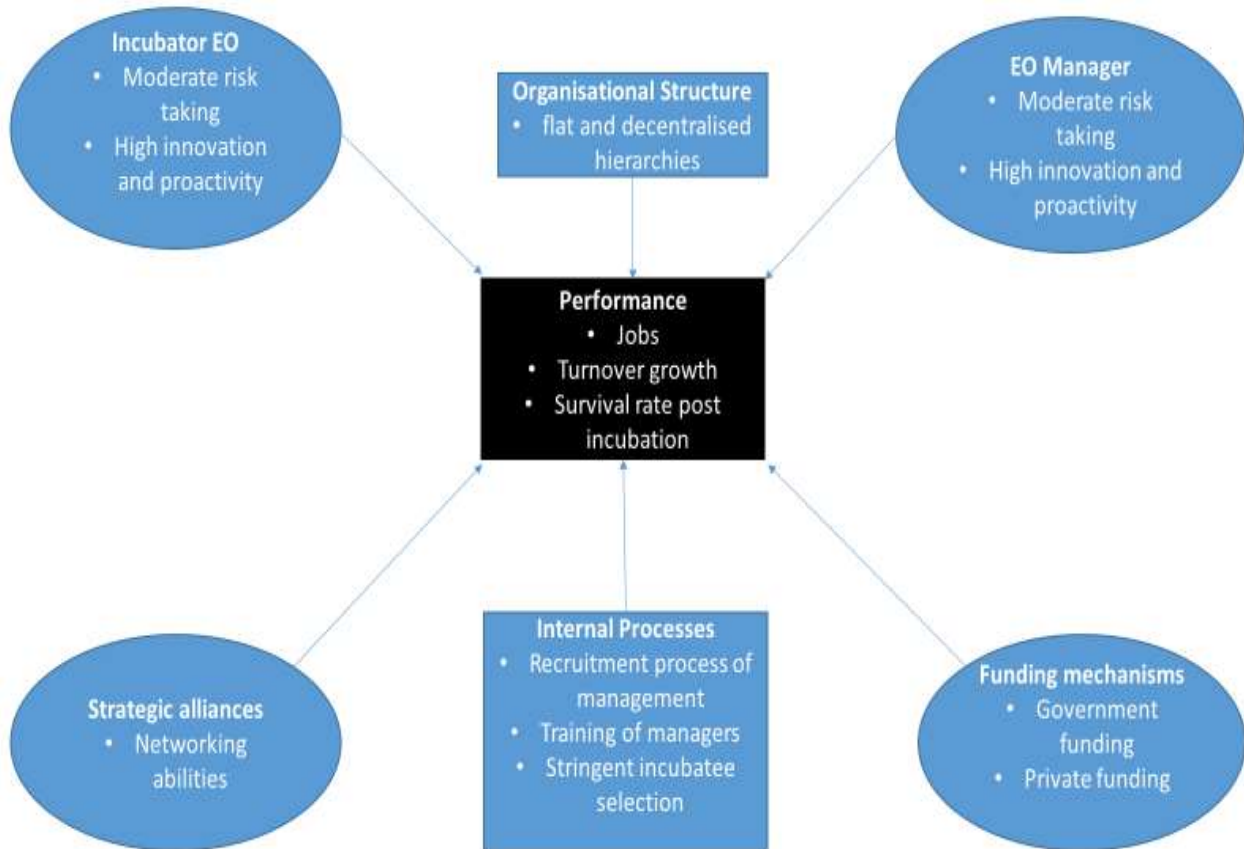


Figure 12: Government Incubator Performance Model

The recommended model for improving performance of government funded incubators realises the importance of EO at both levels. Incubators should concentrate on building innovativeness, proactiveness and autonomy as these had a significant effect on performance.

Funding mechanisms affect performance as funding has a direct impact on the ability to exploit opportunities in the market, to introduce new products and new technologies. Without funding, innovativeness becomes difficult to build as an ability at both manager and incubator level. Currently government funded incubators derive the bulk of funding from Treasury through SEDA and the Department of Small Business Development. Government funded incubators may also consider a mixed-funding model which included private funds such as venture capital funds and angel funds.

Strategic alliances and networking abilities have been cited by Buys and Mbewana (2007) as a critical factor to the success of incubation. Furthermore, access to networks is highlighted as one of the significant ways incubators provide support to incubatees (Schwartz and Gothner, 2009). Coupled with strategic alliances with other privately funded incubators, government funded incubators may create such partnerships which have incubatees access a range of services such as lawyers, accountants, tax consultants as well as marketing practitioners, thereby driving performance of government funded incubators.

Government incubator internal processes are key in particular the processes below:

- Recruitment process for hiring managers should favour managers with high EO abilities particularly innovativeness and proactivity as these managers are forward looking and can support incubatees regarding introduction of new products and services and adoption of new technologies.
- Although government funded incubators seek to drive inclusive growth and lean towards a transformation agenda, the quality of incubatees should still be carefully considered. Buys and Mbewana (2007), following their GODISA study, submitted that the selection of incubatees with quality and implementable business plans is an important component in the incubation process. SEDA in their report describes them as high potential SMEs.
- The organisational structure of the incubator needs to be carefully considered. Flatter hierarchies which encourage autonomy create informal environments where communication flows easily thereby driving innovativeness of both managers and incubatees.
- Training and support should be continually offered to incubator managers as key players in the incubation process.
- The strategic intent of incubators should also drive EO as the incubators themselves seek to take risks and be innovative in their incubating processes.

7.4 Recommendations for Future Research

The topics below are suggested for possible future research:

- Similar research regarding EO impact on privately funded incubators;
- A comparison of the EO of the EO abilities of government funded versus EO abilities of privately funded incubator;
- An evaluation of performance measures to possibly include soft measures such as the satisfaction of incubatees with the incubatee process;

- Further research into assessing EO at the level of its individual components and to determine why certain components covary with each other or against each other;
- The effect on EO of mixed incubators vs specialist incubators e.g. technological incubators and an incubator which supports diverse ventures.

7.5 Concluding remarks

EO abilities cannot be ignored although the links with performance seem weak in the South African context. Other moderators can be used to improve the relationship and to drive entrepreneurship in general. The strategic intent and processes of government funded incubators should be revamped to support high EO and to support the development of EO abilities at manager level.

In closing, the researcher views entrepreneurship as a key subject area with regard to economic development and to drive growth for South Africa. Government funded incubators become key in driving transformative and inclusive growth; however, they should also aim to build assets of value alongside transformation drives. Building assets of value can only be done by improving performance of such incubators and EO abilities become critical as they drive entrepreneurial activity by encouraging exploiting of opportunities through risk taking and introduction of new services and products through innovativeness and proactivity.

References

- Aernoudt, R. (2016). Incubators: Tool for entrepreneurship. *Small Business Economics*, 23(2), 127–135.
- Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualising entrepreneurial orientation. *Strategic Management Journal*, 36(2), 1579–1596. <https://doi.org/10.1002/smj>
- Autio, E., Pathak, S., & Wennberg, K. (2013). Consequences of cultural practices for entrepreneurial behaviors. *Journal of International Business Studies*, 44(4), 334–362. <https://doi.org/10.1057/jibs.2013.15>
- Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*, 60(5), 566–575. <https://doi.org/10.1016/j.jbusres.2007.01.001>
- Baraldi, E., & Havensvid, M. (2016). Identifying new dimensions of business incubation: A multi-level analysis of Karolinska Institute's incubation system. *Technovation*, 50–51, 53–68. <https://doi.org/10.1016/j.technovation.2015.08.003>
- Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(28), 20–28. <https://doi.org/10.1016/j.technovation.2007.07.008>
- Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2011). Does management matter? Evidence from India. *International Growth Center*, 44.
- Blumberg, B., Cooper, D.R., & Schindler, P.S. (2008). *Business Research Methods*. London: McGraw-Hill Education.
- Bøllingtoft, A., & Ulhøi, J. P. (2005). The networked business incubator - Leveraging entrepreneurial agency? *Journal of Business Venturing*, 20(2), 265–290. <https://doi.org/10.1016/j.jbusvent.2003.12.005>
- Bolton, D. L., & Lane, M. D. (2012). Individual entrepreneurial orientation: Development of a measurement instrument, 54(2), 219–233. <https://doi.org/10.1108/00400911211210314>
- Brouthers, K. D., Nakos, G., & Dimitratos, P. (2015). SME Entrepreneurial orientation, international performance, and the moderating role of strategic alliances. *Entrepreneurship: Theory and Practice*, 39(5), 1161–1187.
- Burton-Jones, A. (2009). Minimizing method bias through programmatic research. *MIS Quarterly*, 33(3), 445–471.
- Buys, A. J., & Mbewana, P. N. (2007). Key success factors for business incubation in South Africa: The Godisa case study. *South African Journal of Science*, 103(9–10), 356–358.

- Carlsson, B., Braunerhjelm, P., McKelvey, M., Olofsson, C., Carlsson, B., & Braunerhjelm, P. (2017). The evolving domain of entrepreneurship research The evolving domain of entrepreneurship research. *Small Business Economics*, 41(4), 913–930.
- Carlsson, B., Braunerhjelm, P., McKelvey, M., Olofsson, C., Persson, L., & Ylinenp, H. (2013). The evolving domain of entrepreneurship research. *Small Business Economics*, 41(4), 913–930. <https://doi.org/10.1007/s11187-013-9503-y>
- Cohen, S., & Hochberg, Y. V. (2014). Accelerating startups: The seed accelerator phenomenon. *SSRN Electronic Journal*, (March), 1–16. <https://doi.org/10.2139/ssrn.2418000>
- Cooper, D. R., & Schindler, P. S. (2003). Business research methods. *Business*. Retrieved from <http://130.209.236.149/headocs/31businessresearch.pdf>
- Covin, J. G., Green, K. M., & Slevin, D. P. (2006). Strategic process effects on the entrepreneurial orientation – sales growth rate relationship. *Entrepreneurship: Theory and Practice*, 30 (1), 57–81.
- Covin, J. G., & Wales, W. J. (2012). The measurement of entrepreneurial orientation. *Entrepreneurship: Theory and Practice*, 36(4), 677–702. <https://doi.org/10.1111/j.1540-6520.2010.00432.x>
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston: Pearson.
- Devine, R. A., & Kiggundu, M. N. (2016). Entrepreneurship in Africa: Identifying the frontier of impactful research. *Africa Journal of Management*, 2(3), 349–380. <https://doi.org/10.1080/23322373.2016.1206802>
- Frederick, H., & Kuratko, D. F. (2010). *Entrepreneurship: Theory, process, practice*. South Melbourne: Cengage Learning Australia.
- González-Benito, Ó., González-Benito, J., & Muñoz-Gallego, P. A. (2009). Role of entrepreneurship and market orientation in firms' success. *European Journal of Marketing*, 43(3/4), 500–522. <https://doi.org/10.1108/03090560910935550>.
- Grimaldi, R., & Grandi, A. (2005). Business incubators and new venture creation: An assessment of incubating models. *Technovation*, 25(2), 111–121. [https://doi.org/10.1016/S0166-4972\(03\)00076-2](https://doi.org/10.1016/S0166-4972(03)00076-2).
- Hackett, S. M., & Dilts, D. M. (2007). Inside the black box of business incubation: Study B–scale assessment, model refinement, and incubation outcomes. *Journal of Technology Transfer*, 33(5), 439-471. doi: 10.1007/s10961-007-9056-9.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis*. New Jersey: Pearson Prentice Hall.
- Hofstee, E. (2006). *Constructing a good dissertation*. Sandton: EPE.

- Jantunen, A. (2005). Entrepreneurial Orientation, dynamic capabilities and international performance. *Journal of International Entrepreneurship*, 3, 223–243.
<https://doi.org/10.1007/s10843-005-1133-2>
- Jones, P., Thomas, B., Voisey, P., Gornall, L., Jones, P., & Thomas, B. (2006). *The measurement of success in a business incubation project*.
<https://doi.org/10.1108/14626000610680307>
- Kantur, D. (2016). Strategic entrepreneurship: mediating the entrepreneurial orientation-performance link. *Management Decision*, 54(1), 24–43. <https://doi.org/10.1108/MD-11-2014-0660>
- Koe, W. (2016). The relationship between Individual Entrepreneurial Orientation (IEO) and entrepreneurial intention. *Journal of Global Entrepreneurship Research*.
<https://doi.org/10.1186/s40497-016-0057-8>
- Kraus, S., Rigtering, J. P. C., Hughes, M., & Hosman, V. (2012). Entrepreneurial orientation and the business performance of SMEs: A quantitative study from the Netherlands. *Review of Managerial Science*, 6(2), 161–182.
<https://doi.org/10.1007/s11846-011-0062-9>
- Kropp, F., Lindsay, N. J., & Shoham, A. (2006). Entrepreneurial, market, and learning orientations and international entrepreneurial business venture performance in South African firms. *International Marketing Review*, 23(5), 504–523.
- Kumar, R. (2011). *Research Methodology: A step by step guide for beginners* (3rd ed.). New Delhi: Sage.
- Lewis, D. A. (2001). Does technology incubation work? A critical review. *Reviews of Economic Development Literature and Practice*, 11. US Economic Development.
- Lumpkin, G. T., & Dess, G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172.
<https://doi.org/10.2307/258632>
- Ma, H., & Tan, J. (2006). Key components and implications of entrepreneurship: A 4-P framework. *Journal of Business Venturing*, 21(5), 704–725.
- Magaji, M. S., Baba, R., & Entebang, H. (2015). Entrepreneurial Orientation and Financial Performance of Nigerian SMES: The Moderating Role of Environment. *Asian Journal of Educational Research & Technology*, 5(1), 1–12.
<https://doi.org/10.12792/JMTI.4.1.25>
- Masutha, M., & Rogerson, C. M. (2014). Small enterprise development in South Africa. *Bulletin of Geography*, 26, 141–155. <https://doi.org/10.2478/bog-2014-0050>
- Masutha, M., & Rogerson, C. M. (2015). Business Incubation for small enterprise development: South African pathways. *Urban Forum*, 26(2), 223–241.
<https://doi.org/10.1007/s12132-014-9242-4>

- Morris, M. H., Kuratko, D. F., & Covin, G. C. (2008). *Corporate Entrepreneurship and Innovation* (2nd ed.). United States of America: Thompson South-Western.
- Neuman, W.L. (2011). *Social Research Methods: Qualitative and Quantitative Approaches* (6th ed.). Boston: Pearson.
- Oakshott, L. (2009). *Essential Quantitative Methods for Business Management and Finance* (4th ed.). England: Palgrave-MacMillan.
- Pauwels, C., Clarysse, B., Wright, M., & Van Hove, J. (2016). Understanding a new generation incubation model: The accelerator. *Technovation*, 50–51, 13–24. <https://doi.org/10.1016/j.technovation.2015.09.003>
- Polgar, S., & Thomas, S. A. (2013). *Qualitative Research Methods. Introduction to Research in the Health Sciences*. <https://doi.org/doi:10.1201/9781420013276.ch1010.1201/9781420013276.ch10>
- Prochazkova, P. T. (2015). Incubation Activities and Entrepreneurship : Does it Work Together ? *Journal of Eastern Europe Research in Business and Economics*, 2015, 12. <https://doi.org/10.5171/2015.436040>
- Qureshi, M.S., & Mahdi, F (2014). Impact of effectuation based interventions on the intentions to start a business. *Business Review*, 9(2), 143–157.
- Renko, M., El Tarabishy, A., Carsrud, A. L., & Brännback, M. (2015). Understanding and measuring entrepreneurial leadership style. *Journal of Small Business Management*, 53(1), 54–74. <https://doi.org/10.1111/jsbm.12086>
- Saunders, M., & Lewis, P. (2012). *Doing Research in Business and Management*. Essex: Pearson Education Limited.
- Schwartz, M., & Göthner, M. (2009). A multidimensional evaluation of the effectiveness of business incubators: An application of the PROMETHEE outranking method. *Environment and Planning C: Politics and Space*, 27(6), 1072–1088. <https://doi.org/10.1068/c0897b>
- Shane, S., & Venkataraman, S. (2012). The promise of entrepreneurship as a field of researcher. *The Academy of Management Review*, 25(1), 217–226.
- Širec, K, & Močnik, D. (2012). Gender specifics in entrepreneurs' personal characteristics. *Journal of East European Management Studies*, 17(1), 11–39.
- Small Enterprise Development Agency (SEDA). (2016). Annual Report. Retrieved May 15, 2017, from <http://www.seda.org.za/Publications/Publications/>
- Small Enterprise Development Agency (SEDA). (2017). www.seda.org.za/MyBusiness/STP/Pages/Incubation.aspx
- Solomon, T. (2017). A curvilinear relationship between entrepreneurial orientation and firm performance : The moderating role of employees' psychological safety. *International Entrepreneurship and Management Journal*, 13(4),1139–1156.

- Theodorakopoulos, N., Kakabadse, N. K., & McGowan, C. (2014). What matters in business incubation? A literature review and a suggestion for situated theorising. *Journal of Small Business and Enterprise Development*, 21(4), 602–622.
<https://doi.org/10.1108/JSBED-09-2014-0152>
- Trochim, W. M. K. (2006). *Research methods knowledge base*. Mason: Cengage Learning.
- Verreynne, M. L., Miles, M. P., & Harris, C. (2013). A short note on entrepreneurship as method: A social enterprise perspective. *International Entrepreneurship and Management Journal*, 9(1), 113–128.
- Zikmund, W.G. (2003). *Business Research Methods*. Ohio: South-Western Cengage Learning.

Annexures

Annexure A

Questionnaire

Dear Participant,

Thank you for taking time to complete this questionnaire.

I am conducting research as part of my MBA thesis to assess the effect of entrepreneurial orientation on managers of Government funded incubators and the entrepreneurial orientation of the Government funded incubators. Your assistance is greatly appreciated to obtain a realistic and objective evaluation on this subject.

Your identity and response will be kept strictly confidential. Participation in this questionnaire is voluntary and you are free to withdraw your participation at any stage without any consequences.

Please complete a short questionnaire (about 15-20 minutes). For each question, you are requested to select the appropriate response that applies to your incubator.

If you have any concerns, please contact me or my supervisor. Our details are indicated below. We promise to treat all participants with dignity and your views will be treated with respect.

Many thanks in advance.

Regards,

Patricia Chibaya

E-mail : 16391773@mygibs.co.za

Phone : 083 282 6491

Researcher Supervisor Signature

E-mail : marksj@gibs.co.za

Phone : 082 469 0104

Section A- Demographic Information

1. Gender
 - Male
 - Female

2. Age group
 - Less than 30
 - Between 31 and 40
 - Between 41 and 50
 - 51 and over

3. Please indicate your highest level of qualification
 - Post graduate degree/diploma
 - Degree
 - Diploma
 - Matric
 - Others (please specify)

4. How many employees in the organisation, approximately?
 - Number of employees

5. How many managers are in the organisation?
 - Number of managers

6. Size of government funded incubator – under management.
 - Below 10 incubatees
 - 11-20 incubatees

Above 20 incubatees

7. Average grant received from the Department of Trade and Industry per annum

Grant received

8. Incubator manager's managerial experience'

Below 5 years

5-10 years

Above 10 years

9. Sector – Industry

Technology incubator (ICT)

Bio-tech/chemical incubator

Construction

Manufacturing (agro-processing,
chemicals)

Agriculture (horticulture, floriculture)

Small scale mining and mining
beneficiation

Mixed

Other (please specify)

Section B - Effectiveness of government funded incubator

1. On average how many jobs have been created by the incubatees during the incubation program?

Average jobs created

2. Approximately what is the average turnover growth of incubatees from joining of incubator to graduation? (give the percentage)

Percentage (%)

3. Approximately what is the average growth in profitability of incubatees from joining of incubator to graduation? (give the percentage)

Percentage (%)

4. On average how many graduate incubatees ventures have continued to exist after incubation period?

0-2 years

2-5 years

Above 5 years

5. Has the incubator received any accolades or recognition by the enterprise development support community?

Yes (Please elaborate)

No

6. On average what percentage of incubatees has the incubator managed to assist regarding access to finance?

Yes (Please elaborate)

No

7. What network access has the incubator managed to create for its incubatees?

Lawyer

Accountant

Bank manager

Advertising specialist

Tax consultant

Investors

Others (please specify)

Section C - Individual Manager's Entrepreneurial Orientation

Please indicate the extent to which you agree with the following statements by selecting **ONE** of the options below. For example, if you agree with a statement, only mark "agree" with a cross (X).

Risk taking – *How do you see yourself?*

Are you in general a person who takes risk or do you try to evade risks? Please self-grade your choice (from the options provided)

The grades run from 1: "Don't know" to 5: "Strongly disagree"

1. Compared to the average person, I would say I take more risks.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I like to take bold action by venturing into the unknown.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I am willing to risk money on something that might yield a high return.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. I tend to act boldly in situations where risk is involved.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. I dislike uncertainty.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Innovativeness - How do you see yourself?

1. I generally adapt to change easily.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I often like to try new and unusual methods that are not typical.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I put strong emphasis on proven methods and approaches.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. My Supervisor is willing to listen to my ideas.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. I apply novel approaches to problem solving when solving problems.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. I take a pragmatic approach to solving problems.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. I enjoy assisting incubatees develop new products and services.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. I believe that the company currently sells products that are unique and different.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. I dislike creative projects.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. I have a sense of security in my job

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pro-activeness - How do you see yourself?

1. I usually act in anticipation of future problems, needs or changes.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I tend to plan ahead on projects.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I take initiative to ensure projects move on.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. I enjoy working to a deadline.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. I can identify an opportunity.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. I am spontaneous/ flexible at work.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. I like to work under high pressure environment.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. I manage resources effectively to assist the incubatees.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. I can do research on market trends on a regular basis.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Autonomy

1. I am permitted the freedom to act and think without interference.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I can perform jobs that allow me to make my own decisions/judgements.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I am given freedom and independence to decide how to go about doing my work.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section D - Government Incubator EO

Risk taking

1. Being a "risk taker" is considered a positive attribute for incubator staff.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. People in our incubator are encouraged to take calculated risks during selection and mentoring process.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Senior people are able to take risk decisions.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Our incubator encourages both exploration and experimentation for opportunities.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. The incubator has a strong tendency for high risk projects.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. The incubator is cautious and prefers exploring gradually.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. When confronted with decision making situations the incubator adopts a cautious wait and see posture.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Innovativeness

1. Your organisation has a formal approach for generating ideas and using creativity/innovation to address business issues?

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. The incubator actively promotes improvements and innovations in its processes.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Our incubator is innovative in its methods of operation.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Meetings at your incubator **OFTEN** produce truly innovative results.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. The incubator seeks new ways to do things.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Senior managers of the incubator prefer incubatees with established products and services.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. My organisation have a budget for innovation.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Incubator managers have a strong emphasis on research and development (R&D)

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pro activeness

1. I feel encouraged to come up with new and better ways of doing things.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. We always approach incubatees with alternative methods to solve their questions.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. We excel at identifying opportunities for our incubatees.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Champions of innovation are supported in driving projects through to implementation.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. The incubator manager encourages incubates to respond to competitors actions.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. The incubator manager encourages incubates to introduce new products and services.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Leaders identify problems, collect information from various sources, and synthesize that information into effective solutions.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Aggressiveness

1. Our incubator(s) is intensely competitive.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Our incubator takes an aggressive approach when competing.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Our incubator prefer rapid growth to gradual growth.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Autonomy

1. Incubator employees are permitted to act and think without interference.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Employees perform jobs that allow them to make own decision/judgement.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Employees are given freedom and independence to decide how to go about doing their work.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Employees are given freedom to communicate without interference.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Employees are given authority and responsibility to act alone if they think it's in the best interest of the business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Employees have access to all vital information.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>