The impact of business incubation in shaping the entrepreneurial mindset among incubatees

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ABSTRACT

The research intended to provide an insightful view of the impact of business incubation on the entrepreneurial mindset and entrepreneurial self-efficacy as perceived by incubatees in a South African context. The research was carried out primarily in the Gauteng province. Business incubators are considered instrumental in accelerating the creation of successful entrepreneurial ventures. However, there is disagreement surrounding the benefits of business incubators with some scholars suggesting that the benefits are claimed mostly by its practitioners, there is also little systematic evidence of business incubator efficacy in promoting job and wealth creation.

Data collection was in the form of a questionnaire distributed through a web based survey tool. The email containing the link to the questionnaire was accompanied by a covering letter explaining the nature, purpose and objectives of the survey. The covering letter assured the participants of their privacy and anonymity as well as our adherence to the Wits Code of Ethics for Research on Participants. Weekly reminders were sent to those participants that had not responded.

Incubatees perceived a moderate impact of incubation on their entrepreneurial mindset and entrepreneurial self-efficacy. Incubatees who had completed the program perceived a higher impact on both the entrepreneurial mindset and entrepreneurial self-efficacy than incubatees who were still in the program.

This research explored an area of study that has received very little attention prior to this research. It offered opportunities to build theory and its findings could potentially inform future research from an academic perspective. Furthermore, this research also identified the specific areas of incubation that the incubatees perceived incubation to have had an impact on. These findings could assist business incubation practitioners to identify specific areas of incubation that require intervention.

DECLARATION

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

Lukhanyo Tilana

Signed at ……

On the …….. day of …… 2015

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Dynamic forces such as shifting population demographics, technological changes, and economic volatility have resulted in transformed societies throughout the world (Xavier, Kelly, Kew, Herrington & Vorderwulbecke, 2012). The transformation of societies has brought new challenges and opportunities to the forefront. Xavier et al. (2012) found that governments, public and private organisations, and individuals have resorted to entrepreneurship in response to these dynamic forces.

The practice of entrepreneurship is restricted by social challenges such as poverty, unemployment and poor education in developing countries such as South Africa (Herrington, J Kew, & P Kew, 2009). These social ills are more prevalent among the youth (Herrington et al., 2009). Table 1 indicates that youth unemployment rates are considerably higher than that of adult unemployment rates. Furthermore, in the period 2008 to 2014, there was an increasing trend in the rate of unemployment among both the youth and adults. Youth unemployment grew from 32.7 percent in 2008 to 36.1 percent in 2014 compared to 13.4 percent in 2008 to 15.6 percent in 2014 for adults.

Employment opportunities were considerably less for the young people compared to adults in the period 2008 to 2014, this is indicated by the lower absorption rates that are more than 20 percentage points lower than that of adults (Table 1). There was also a reduction in the absorption ration for both groups, with youth absorption dropping from 35.5 percent in 2008 to 30.8 percent in 2014, and adult absorption rate dropping from 59.9 percent in 2008 to 57.8 percent in 2014.

South Africa has the third highest unemployment rate in the world for people between the ages of 15 to 24 years, surpassed only by Greece and Spain, these countries registered higher unemployment rates in this age range according to

the World Economic Forum (WEF) Global Risk Report (WEF, 2014). The report estimated figures exceeding half of the population between 15 to 24 years of age are unemployed.

Table 1: Unemployment rate of youth and adults in South Africa, 2008-2014

(Stats SA, 2014)

Age group	2008	2009	2010	2011	2012	2013	2014
Youth 15-34 years	32.7	33.7	35.7	36.1	35.8	36.2	36.1
Adult 35-64 years	13.4	12.4	14.9	14.4	15.1	15.0	15.6
Total 15-64 years	23.2	23.0	25.1	24.8	25.0	25.0	25.2
Youth absorption	35.5	34.2	31.1	30.3	30.8	30.3	30.8
Adult absorption	59.8	60.6	56.7	56.5	56.5	57.0	57.8

The findings of a report prepared by Statistics South Africa on national and provincial labour market focusing on the youth affirmed the findings of Herrington et al. (2009) and WEF (2014) that the unemployment problems facing South Africa, in particular the youth, are common all over the world. In the labour market, young people in South African are considered to be an extremely vulnerable group (Stats SA, 2014).

The report also analysed the youth labour market for the nine provinces individually, the findings are that in every province, the level of education attainment by young people has improved over the period, but their labour market prospects have generally deteriorated. This reflects structural weaknesses in the labour market due to the mismatch between skills and available jobs (Stats SA, 2014).

The unemployment challenges experienced by young people could be attributed primarily to their lack of experience, skills and education necessary to enable them to secure formal employment (Herrington et al., 2009). The unemployment challenges faced by young people are not unique to South Africa as they are common to most parts of the world. The high rates of youth unemployment are

not caused exclusively by the unavailability of employment opportunities, young people also do not have the skills, work experience, job search abilities and financial resources required to find employment (Herrington & Kew, 2013). Herrington et al. (2009) found that these young people are therefore forced to resort to some form of entrepreneurial activity.

The increasing segment of the population that is unemployed and living in poverty places additional strain on limited government resources that need to be prioritised on critical areas such as infrastructure, health and education (Herrington et al., 2009).

In an attempt to address the problems of unemployment, the Government of South Africa introduced initiatives aimed at encouraging and supporting entrepreneurship. One of the initiatives introduced by the Government was enterprise development. Enterprise development was introduced by the Government as an instrument through which the public and the private sector could support and also promote entrepreneurship. The Broad-based Black Economic Empowerment Act of 2003 was conceptualised as the legislation that will guide the implementation of enterprise development (DTI, 2012). In the revised CODES, enterprise development has a significant portion of the overall scorecard, which increased from 15 points out of 100 points to 40 points out of 105 points, combined with preferential procurement.

Research by Lichtenstein, Lyons, and Kutzhanova (2004) reported that enterprise development was conceived as a strategy for supporting economic development that endeavours the formation of a conducive environment in which new ventures can be conceptualised, created and protected inorder for them to flourish into successful ventures. Business incubators are the infrastructure for implementing enterprise development, the business support programs they offer are intended to encourage economic development by assisting entrepreneurs and their ventures (Davies, 2009; Al-Mubaraki & Busler, 2013).

Business incubators provide four distinct types of services that can also be classified into four distinct categories such as, new venture consulting in all areas

important for business development and growth, access to finance, training and networking, and business planning (Davies, 2009; Peters, Rice, & Sundararajan, 2004).

The idea of business incubation in the South African context was initiated in 1995 by the Small Business Development Corporation. The Small Business Development Corporation initiated sector specific clusters and termed them the "hives of industry" (Cullen, Calitz, & Chandler, 2014, p. 80; Lalkaka & Abelti, 1999, cited in Meru, 2011). Business incubators are considered to be suitable means for promoting enterprise development because their tenants "survive" inside the incubators with a 90 percent survival rate (Molnar, Adkins, Yolanda, Grimes, Sherman & Tornatzky, 1997; Al-Mubaraki Al-Karaghouli & Bustler, 2010).

The survival rate of small businesses within the incubators has resulted in Governments and the private sector increasing their funding and support for incubators in an effort to increase the number of successful ventures in a community. Ventures in an incubation program have been shown to create employment and economic development (Al-Mubaraki and Busler (2013).

The potential for business incubators to produces successful ventures that create employment and economic development was recognised worldwide. In particular their ability to develop small ventures that are able to complete in local, national or international markets with limited resources, technical or business expertise (Al-Mubaraki and Busler, 2009, 2010).

The positive impact of business incubators on employment creation and economic development was confirmed in a study by Wagner (2006), the study examined nine incubator programs with 175 incubated businesses in the state of Missouri in the United States. The study found evidence that these businesses had created 502 jobs in total, or an average of 60.5 jobs per program. A study by Lalkaka et al. (2003) investigated the impact of business incubators within the context of the developing world. The study found that in China, business incubators were providing a good financial return, with the investment for a year

most likely to be covered by tax receipts alone in the following five years. Figure 1 provides a model for job creation by incubators.

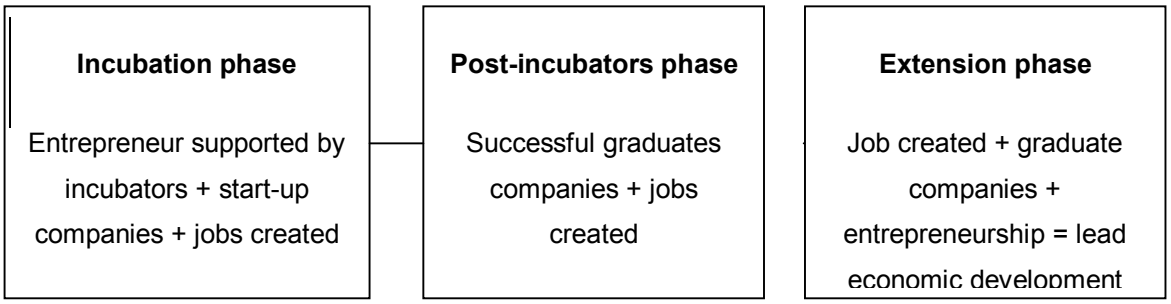

Figure 1: Incubators lead economic development

(Al-Mubaraki & Busler, 2013, p. 367)

The assistance provided by business incubators in the economic development process goes beyond assisting their tenants with the development of their ventures. Business incubators also provide psychological support for entrepreneurs. This type of support is likely to cause the entrepreneurs to persist in their venture creation and growth process. The psychological support created a unique space in incubation for economic development to create jobs and diversify the local economic losses (Al-Mubaraki & Busler, 2013).

Buys and Mbewana (2007) and Litchtenstein et al. (2004) found that the concept of business incubation is not always as successful in nurturing start-up ventures as intended, and as a result, the benefits of business incubators are mostly advocated by its practitioners (NBIA, 2011, cited in Bruneel, Ratinho, Clarysse, & Groen, 2012). The notion that the benefits of business incubators are advocated by its practioners is perpetuated by the lack of research into the activities of business incubators (Hackett & Dilts, 2004).

Research conducted previously investigating the performance of business incubators focused primarily on the performance of the venture with little or no attention dedicated on the impact of the incubation process on the individual entrepreneur. However, there has been research that emphasised the importance of the role played by the entrepreneur in the process of venture

creation to the extent that some researchers have argued that a venture will be successful regardless of the product as long as it is driven by a competent entrepreneur.

This research focused on the impact of the incubation process in shaping the individual entrepreneur's entrepreneurial self-efficacy and entrepreneurial mindset.

In this chapter, Section 1.2 deals with the theoretical background to the study and Section 1.3 highlights the purpose of the study. Section 1.4 discusses context, with Section 1.5 introducing the problem statement. Section 1.6 addresses the significance of the study, Section 1.7 deals with the delimitations of the study while Sections 1.8 and 1.9 define important terms used and assumptions made in the study, respectively.

1.2 Theoretical background

The theoretical roots the informed this research emanated from the following domains: economic development business incubation, entrepreneurial self-efficacy, and entrepreneurial mindset.

Business incubators are recognised as the infrastructure for pursuing enterprise development. They are organisations that form the link between funders of enterprise development and its beneficiaries by providing an environment that is conducive for business start-ups. There are a number of organisations that provide assistance to entrepreneurs this organisations are referred to as incubators (Buys & Mbewana, 2007). Entrepreneurs in an incubation program are referred to as incubatees.

Habitual and/or accidental entrepreneurs possess what can be likened to an 'entrepreneurial mind'. In the entrepreneurial process, entrepreneurs engage in activities such as looking for opportunities, looking to create new opportunities, identifying underserved markets, forming teams and partnerships with other

business people (Allen & Economy, 2008). The entrepreneurial mindset is a key construct in the research and a dependent variable.

Human behaviour and actions could be associated with an individual's self-efficacy (Chen, Greene and Crick (2004). An individual's level of self-efficacy determines his/her choices, level of effort, and perseverance in performing a task. Therefore individuals with high levels of self-efficacy are likely to put in extra effort when performing a given task, and to persevere and see a task through under difficult conditions. Entrepreneurial self-efficacy was a key construct in the research and a dependent variable.

The constructs of entrepreneurial self-efficacy and entrepreneurial mindset have been identified by various researchers as significant contributors to the success of the entrepreneur; however, there has been insufficient research on the impact of the incubation process on the individual entrepreneur. Particularly, how the process is perceived to shape the individual entrepreneur's entrepreneurial mindset and entrepreneurial self-efficacy.

This research focused on the impact of the incubation process in shaping the individual entrepreneur's self-efficacy and mindset as perceived by the incubatees by attempting to measure the perceived impact of the incubation process in shaping the individual entrepreneur's self-efficacy and mindset.

1.3 Purpose of the study

The purpose of this study was to measure the impact of the business incubation process as perceived by incubatees in shaping the entrepreneurial mindset and entrepreneurial self-efficacy of business incubatees in the South African context.

1.4 Context of the study

1.4.1 Global context

Significant resources have been committed to the battle against poverty and inequality in both the developed and developing countries. Despite these efforts, there has been little progress made towards eradications of poverty and inequality (Triegaardt, 2006). There are views among some researchers that suggest that globalisation is among the causes of the persistent poverty and inequality (Dominelli, 2004).

In 2013, approximately 2.47 billion people in the world lived in poverty with an income of US $2 or less a day (Bruton, Ketchen & Ireland, 2013; London & Hart, 2004). This is in accordance with the World Bank's definition of the median poverty level for emerging economies (Prahalad & Hart, 2004, cited in Alvarez & Barney, 2013; World Bank, 2011).

The total population living in poverty was estimated to be relatively stable as it was neither growing nor reducing (Bruton et al., 2013); however, it showed signs of marginal decline from 2.59 billion to 2.47 billion between 1981 and 2008 (Chen & Ravallion, 2013 cited in Bruton et al., 2013).

Researchers and business organisations recognise this population as a large potential market for selling a variety of goods and services (Bruton et al., 2013). However, Bruton et al. (2013) proposed a different perspective by arguing that entrepreneurship offers a means through which people have an opportunity to break the cycle of poverty.

Entrepreneurs drive the market production and the fulfilment of social and economic needs by recognising opportunities and taking action to exploit them (Valliere, 2013). Bruton et al. (2013) argued that given that a third of the world's population is living in poverty, entrepreneurship scholars have the potential to improve the lives of these individuals by building an understanding of how they can act as entrepreneurs as a foundation for improving their lives.

Entrepreneurship leads to increased economic efficiencies, brings innovation to market, creates new jobs, and sustains employment levels (Shane & Venkataraman, 2000). However, despite decades of research, there is limited understanding of the factors, decisions and processes that lead an individual to become an entrepreneur (Markman, Balkin, & Baron, 2002).

Alvarez and Barney (2013) agreed that alleviating abject poverty is a challenging task. Abject poverty continues to dominate many parts of the world, this is despite three decades of development efforts by agencies and governments (Stiglitz, 2002, cited in Alvarez & Barney, 2013).

1.4.2 South African context

Since the advent of the democratic dispensation, the South African government has developed policies that have focused on poverty alleviation, improving economic growth, relaxing import controls and reducing the budget deficit (Triegaardt, 2006). In spite of the pro-poor policies, South Africa remained one of the highest ranked in the world in terms of income inequality (World Bank, 2006).

The Gini coefficient, which is a number between 0 and 1, where 0 indicates total equality and 1 indicates total inequality, is calculated to be approximately 0.65 based on expenditure data (per capita excluding taxes) and 0.69 based on income data (per capita including salaries, wages and social grants) in 2011 (Table 2). There has been a slight improvement in the Gini coefficients between 2006 and 2011. These findings are in-line with the findings of the World Bank (2006) Report.

Table 2: Inequality, 2006, 2009 and 2011

(Stats SA, 2014)

Inequality indicators	2006	2009	2011
Gini coefficient (income per capita including salaries, wages and social grants)	0.72	0.70	0.69
Gini coefficient (expenditure per capita excluding taxes)	0.67	0.65	0.65
Share of national consumption of the poorest 20% (per capita)	4.4%	4.4%	4.3%
Share of national consumption of the richest 20% (per capita)	64.1%	61.4%	61.3%

From Table 3, poverty levels (percentage of the population that is poor) in the country have dropped since 2006 reaching a low of 45.5 percent in 2011 when applying the upper-bound poverty line. This is equivalent to 23 million people living below the upper-bound poverty line. Table 3 indicates that there has been a reduction in poverty in 2011. Stats SA (2014) attributes this to a combination of factors ranging from a growing social safety net, income growth, above inflation wage increases, decelerating inflationary pressure and an expansion of credit. Triegaardt (2006) argued that economic policies on their own are unable to resolve the issue that there are more people seeking employment than there are job opportunities.

Table 3: Poverty headcounts in 2006, 2009 and 2011

(Stats SA, 2014)

Poverty headcounts	2006	2009	2011
Percentage of the population that is poor	57.2%	56.8%	45.5%
Number of poor persons (million)	27.1	27.8	23.0
Percentage of the population living in extreme poverty	26.6%	32.4%	20.2%
Number of extremely poor persons (millions)	12.6	15.8	10.2

The growth and development of the small and micro-enterprise business sector was recognised by government policy makers as an important component of the

efforts targeted at employment creation and poverty eradication (DTI, 2006). In South Africa there are thresholds for specific industry sectors. These thresholds are provided in the National Small Business Act, as revised by the National Small Business Amendment Bill of 2003 (DTI, 2004).

The industry thresholds applicable in South Africa are considered to be low as compared to the developed-country norms (Urban, 2010). Furthermore, in South Africa there is no conclusive definition of the informal to unregistered, unregulated businesses, which includes service enterprises, production activities and venturing (Urban, 2010).

The findings of the Global Entrepreneurship Monitor (GEM) reports identified cultural and social norms as the major strength of entrepreneurial orientation; these are seen to be the differentiating factors for high levels of entrepreneurial activity in different countries (Minniti & Bygrave, 2003). There are significant differences in entrepreneurial activity in South Africa among the various races (Foxcroft, Wood, Kew, Herrington, & Segal, 2002).

The GEM defines Total Early-Stage Entrepreneurship Activity (TEA) as the prevalence rate of individuals in the working-age population who are actively involved in business start-ups, either in the phase preceding the birth of the firm (nascent entrepreneurs), or the phase spanning 3.5 years after the birth of the firm (owner-managers of new firms).

According to the GEM South Africa has a relatively low Gross Domestic Product (GDP) per capita relative to other GEM economies, this therefore means that high levels of TEA would be expected. South Africa should have a TEA in the region of 14 to 16 percent based upon a line of best fit between GDP per capita and TEA levels (Herrington & Kew, 2013).

Column 3 of Table 4 indicates that there has been a steady increase in the TEA levels in South Africa from a low in 2003 of 4.3 percent to 10.6 percent in 2013. This therefore means that South Africa is under-performing in terms of TEA. Column 2 depicts South Africa's overall ranking over the past 11 years compared

to other GEM countries. The TEA has increased over the years since 2006, with the exception of 2009, but has remained below the median for all GEM countries.

Table 4: Prevalence rates of early-stage entrepreneurial activities in South Africa and relative rankings, 2002 – 2013

(Herrington & Kew, 2013)

Year	TEA ranking	TEA rate	Median	Number of positions above/below Median
2002	20th out of 37 countries	6.3	19	1 below
2003	22nd out of 31 countries	4.3	16	6 below
2004	20th out of 34 countries	5.4	17	3 below
2005	25th out of 34 countries	5.2	17	8 below
2006	30th out of 42 countries	5.3	21	9 below
2008	23rd out of 43 countries	7.8	22	1 below
2009	35th out of 54 countries	5.9	27	8 below
2010	27th out of 59 countries	8.9	30	3 below
2011	29th out of 54 countries	9.1	27	2 below
2012	22nd out of 69 countries	7.3	34	12 below
2013	35th out of 68 countries	10.6	34	1 above

Note: SA did not participate in the GEM study in 2007

According to Urban (2010), the findings of the GEM report are consistent with the country's socio-political history, particularly the effects of apartheid education, spatial segregation and job discrimination on different race groups.

Frese (2002) argued that more so than purely economic or socio-demographic factors, "psychological factors (entrepreneurial orientation, personal initiative, planning strategies, and motivating employees) are very good predictors of success and failure in micro-businesses in Africa" (p. 178) and by inference, in other developing economies as well.

Ramachandran and Shah (1999) found that minority (non-indigenous) entrepreneur firms in the African context start out larger and grow significantly faster than indigenously owned African firms grow. Moreover, within indigenously owned African firms, entrepreneurs with secondary and/or university education realise a higher rate of growth; access to education enables indigenous African entrepreneurs to develop managerial skills that serve as a substitute for the informational and financial networks created by minority entrepreneurs, which are important predictors of entrepreneurial activity.

In South Africa the decision to embark on a new venture is informed by potential profit rates, educational levels of the entrepreneur, agglomeration as per economic district size, and availability of bank finance, and profits having the strongest effect on start-up rates (Naude, Gries, Wood, and Meintjies, 2008).

Maas and Herrington (2007) suggested that South Africa has a dual-logic economy, where on the one side there is a highly developed economic sector and on the other side one struggling for survival (Maas & Herrington, 2007). From Table 4, the TEA rates for South Africa are lower compared with the averages of different categories of countries as indicated by the consistently low rankings. This can be influenced by the dual-logic nature of the economy (Maas & Herrington, 2007).

The concept of a dual-logic economy was introduced by President Mbeki in his State of the Nation address in February 2003. According to President Mbeki:

> With regard to the accomplishment of the task of ensuring a better life for all, we must make the observation that the government is perfectly conscious of the fact that there are many in our society who are unable to benefit directly from whatever our economy is able to offer. Obviously, this includes those on pension and the very young. However, it also includes people who are unskilled and those with low levels of education in general. This reflects the structural fault in our economy and society as a result of which we have a dual economy and society. The one is modern and relatively well

> developed. The other is characterised by underdevelopment and an entrenched crisis of poverty (The Presidency, 2003b, State of the Nation Address).

Moreover, President Mbeki stated in his address to the National Council of Provinces in November 2003 that:

> The second economy is characterised by underdevelopment, contributes little to the GDP, contains a big percentage of the population, incorporates the poorest of the rural and urban poor, is structurally disconnected from both the first and global economy and is incapable of self-generated growth and development (The Presidency, 2003a, National Council of Provinces Address).

The idea of a second economy increasingly formed part of policy discussions at all levels of government. This was demonstrated by the former KwaZulu-Natal Minister for Finance and Economic Development, Dr Zweli Mkhize, he began his 2005 budget speech with a description of the economy using the analogy of a train with the first economy occupying the first-class compartments and the second economy being the second and third class sections. He argued that interventions in the second economy are even more crucial than projects aimed at stimulating growth in the first economy.

While government at all levels acknowledges the presence of a second economy, its contributions to economic development, job creation and poverty alleviation remain unacknowledged. As demonstrated in the State of the Nation on 21 May 2004, President Mbeki argued that:

> The core of our response to all these challenges is the struggle against poverty and underdevelopment, which rests on three pillars. These pillars are: encouraging the growth and development of the first economy, increasing its possibility to create jobs, implementing our programme to address the challenges of the second economy, and building a social security net to meet the objective of poverty alleviation (The Presidency, 2004, State of the Nation address).

Research by Valodia and Devey (2012) found that contrary to the views already expressed, the second economy does contribute to the GDP. It estimated that the second economy contributed approximately between seven and 12 percent of GDP (Valodia & Devey, 2012). Structural linkages between the two economies do exist; there are also multiple forward and backward linkages between the two economies (Valodia & Devey, 2012).

The government's view of addressing economic development, unemployment and poverty was to focus on growing the first economy and supporting the second economy with the view to finally transforming and integrating it into the first economy. In the state of the nation address of 2005, President Mbeki argued that:

> We must achieve new and decisive advances towards eradicating poverty and underdevelopment, within the context of a thriving and growing first economy and a successful transformation of the second economy. To take the interventions in the second economy forward, additional programmes will be introduced or further strengthened by April, as part of the Expanded Public Works Programme (Buhlungu, Daniel, Southall, & Lutchman, 2006, p, 224.

Research by Skinner (2005) suggested that government policy should take the needs of survivalist workers and the second economy into account. Government policy for the second economy is either absent, or where it does exist, is piecemeal or ineffective (Skinner, 2005).

In Table 5 the TEA rates from 2001 to 2013 for both necessity- and opportunity-driven TEA registered an increase. The ratio of opportunity- to necessity-driven TEA showed a decline from 3.53 in 2001 to 2.26 in 2013. The percentage of necessity-driven TEA has almost doubled from 18.3 in 2001 to 30.3 in 2013.

There are different motivating factors that drive entrepreneurs to embark on a new venture. The motivating factors could be as a result necessity or survival. The survival motivation is as a result of the individual being unable to generate an income or the individual being unable to secure formal employment, this leads

the individual to start a venture without conducting any form of business analysis and undertaking any preparatory work (Herrington & Kew, 2013). The returns from entrepreneurship associated with necessity entrepreneurship are very low and are inconsistent (Autio, 2007).

On the other hand, the opportunity motivation is as a result of the individual making the decision to exploit an opportunity regardless of whether that individual is employed or could secure formal employment (Herrington & Kew, 2013). Ventures started by individuals motivated by opportunity are likely to have been properly research and planned, moreover, these ventures are likely to survive and employ people than ventures started by necessity motivated individuals (Herrington & Kew, 2013).

In developed economies the ratio of opportunity entrepreneurs is expected to be higher than necessity entrepreneurs. In underdeveloped economies, the ratio of necessity entrepreneurs is expected to be higher that opportunity entrepreneurs (Herrington and Kew, 2013). From Table 5, the rate of opportunity-driven entrepreneurship is considerably higher than necessity-driven entrepreneurship. No academic literature could be found to explain these findings; however, it is suspected that South Africa's elaborate social security system could potentially have a role to play in the consistently low rates of necessity-driven TEA.

Necessity-driven entrepreneurs operate primarily in the informal economy (Herrington & Kew, 2013, Lithely, 2004; Tinsel, 2000). Although the emergence of the informal economy is largely stimulated by unemployment and low income, there is evidence that informal businesses are also being established as a result of entrepreneurs seizing business opportunities (Antipolis, 2000; Ligthelm, 2014). The emergence of a spirit of entrepreneurship in the second economy should be encouraged and supported, as it should ultimately result in the establishment of sustainable business. The majority of businesses in the second economy (70 percent) are located in the trade sector (World Bank, 1993).

Table 5: Opportunity and necessity-driven TEA rates among the adult population of South Africa, 2001 – 2013

(Herrington & Kew, 2013)

	2001	2005	2009	2013	Ave
Necessity-driven (% of TEA)	18.3	39.5	32.7	30.3	38.6
Opportunity-driven (%of TEA)	64.7	57.1	63.7	68.6	57.9
Ratio of opportunity vs. necessity	3.53	1.44	1.94	2.26	1.55

Von Broembsen, Wood, and Herrington (2005) reported that although micro enterprises or survivalists have entrepreneurial characteristics, their ability to grow and create employment, is restricted by their scarcity of skills, business knowledge and resources. Research by Skinner (2005) indicated that government policy on enterprise development focused primarily on the first economy.

Government policy for the second economy is either absent, or where it does exist, is either piecemeal or ineffective (Skinner, 2005). Moreover, business support funding favours established SMMEs rather than survivalist enterprise, women entrepreneurs and rural SMMEs (Buhlungu et al. 2006).

Research by Ligthelm (2004) found that the majority of informal traders have no formal business training and that they recognised the need for formal business training.

Table 6: Business training needs in the informal economy

(Lighthelm, 2004, p. 34)

Training need	Hawker/street vendor	Spaza/tuck shop	General dealer in township
Management	70.2%	73.4%	83.3%
Bookkeeping	61.4%	58.5%	53.3%
Marketing	61.4%	54.8%	63.3%
Sales	64.9%	43.6%	36.7%
Computer skills	15.8%	31.4%	40.0%
Credit control	21.1%	17.6%	16.7%
Customer/ human relations	3.5%	7.4%	10.0%
Labour relations	1.8%	6.9%	10.0%
Literacy/numeracy training	0%	0%	6.7%

As seen in Table 6, the majority of traders expressed a need for training in business management (73.8 percent), bookkeeping (58.5 percent), and marketing (57.1 percent), which could be facilitated by business incubators. A business incubator is an organisation that facilitates the process of creating new businesses by providing them with a comprehensive and integrated range of services, including incubator space, the provision of a comprehensive range of shared services, strict admission and exit rules, professional management, and other assistance as needed and required (Adegbite, 2001; Hackett & Dilts, 2004; NBIA, 2013; Van der Zee, 2007).

The importance attached to business incubation in South Africa was emphasised by the launch of the incubation support programme (ISP) in September 2012. The aim of the programme is to encourage private sector partnership with government to support business incubators in order to develop SMMEs and nurture these into sustainable enterprises that can provide employment and contribute to economic growth (DTI, 2012).

The incentive is provided in pursuit of ensuring that SMMEs are eventually graduated into the mainstream economy through the dedicated support provided to the incubators, thus creating successful enterprises with a potential to revitalise communities and strengthen local and national economies. Business incubation is one of the best platforms that a country can use to promote broader economic participation, uplift the country's entrepreneurial base and encourage start-up activities. The South African government takes cognisance of the fact that the growth of an entrepreneurial base and the sustainable development of SMMEs remain a determining factor and a key and a key priority in fostering broadening participation in the economy (Davies, 2009).

The ISP is not only focusing on the first economy, it has the potential of bringing a significant number of enterprises from the survivalist stage and informal economy into being main players in the mainstream economy (Cullen et al., 2014).

1.5 Problem statement

1.5.1 Main problem

Business incubation in South Africa began in 1995 (Lalkaka & Abetti, 1999, cited in Meru, 2011). It comprised a number of independent workstations that were put together to constitute a cluster of workshops (Meru, 2011). Business incubators are considered instrumental in accelerating the creation of successful entrepreneurial ventures (Bruneel et al., 2012). However, there is disagreement surrounding the benefits of business incubators with some scholars suggesting that the benefits of business incubators are claimed mostly by its practitioners (NBIA, 2011).

This view is further supported by Massey, Quintas and Weild (1992) and Pha et al. (2005) who reported that there is little systematic evidence of business incubators efficacy in promoting job and wealth creation.

This research seeks to measure the perceived impact, from the perspective of incubatees, of business incubation in shaping the entrepreneurial mindset and entrepreneurial self-efficacy of incubatees from a South African perspective.

1.6 Significance of the study

Studies intended at understanding the process and function of the business incubators need to focus all all aspects of the business incubator. The assistance provided by the incubators transcend the physical space provided by the business incubator, it includes the interaction between the business incubator and the incubatees (Hackett and Dilts, 2004). Studies intended to analyse or to measure the outcomes of business incubation must be designed in such a way that they take cognisance of the complex process involved in the incubation process and also the impact of the various aspects of incubation process on the incubatees (Hackett & Dilts, 2004).

The complexity of the incubation process, in particular the complexity of the impact of the incubation process on the personal and professional development of the incubatees needs to be understood, measures and used to inform the design of business incubation. However, these complexities have resulted in very few studies conducted in this field (Stephens and Onofrei, 2012).

Hannon (2005) conducted a review of published research on business incubation. He found the research focused on the design and makeup of the business incubator and also the design of the incubation process. There was little or no studies aimed at understanding the impact of business incubation on the incubatees.

This research focused on the individual entrepreneur and sought to measure the impact of business incubation on the entrepreneurial mindset and entrepreneurial self-efficacy, as perceived by the individual entrepreneur. Furthermore, there was no study found that dealt particularly with the impact of incubation, as perceived by the incubatees, on the entrepreneurial mindset and entrepreneurial self-efficacy of the incubatees. This study will assist in:

- Adding to the limited body of knowledge in this regard
- Informing the design of appropriate incubation programmes

1.7 Delimitations of the study

This research focused on the South African context. It was aimed at entrepreneurs post-incubation.

1.8 Definition of terms

- Enterprise development is defined as “assistance to entrepreneurs in support of creation, growth and survival of their ventures” (Koven and Lyons, 2003, p. 100).
- Self-efficacy refers to the individual’s belief in their personal capability to accomplish a job or a specific set of tasks (Bandura, 1977, cited in McGee, Peterson, Mueller, & Sequeira, 2009, p. 966).
- Meta-cognition is a process that incorporates self-regulation, but yet advances that regulation to also describe the process through which regulation influences the development and generation of a new sense-making structure as a function of the changing environment (Nelson, 1996; Flavell, 1987 cited in Urban, 2012).
- Cognition is “the process through which information is entered into memory, processed, and retrieved for later use” (Baron, 2008, p. 328; Forgas, 1995; Isen, 2002, cited in Arora, Haynie and Laurence, 2011, p. 360).

1.9 Assumptions

The main assumptions made in this research are the the respondents would accurately reflect their perspectives on entrepreneurship, their incubation programs and their experiences and that the required sample size would be obtained.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature reviewed pertaining to the research topic at hand. It focuses on enterprise development as an economic development strategy aimed at supporting the development of SMMEs. Business incubators are identified as the tools for achieving enterprise development. The literature therefore explores in detail the origins of business incubators, the various types in existence and highlights their value proposition.

The literature on business incubation highlights the importance of a competent entrepreneur for the success of the venture. However, the literature reveals that there has been an over emphasis on the tangible aspects of business incubation while the intangible aspects remain relatively unexplored. Research on business incubators reveals that mentoring and coaching could potentially increase the number of graduating incubatees; however, it was unclear as to which aspects of mentoring and coaching have an effect.

Entrepreneurship research reveals that entrepreneurs share a similar mindset. This mindset allows them to seek opportunities for exploitation. Moreover, entrepreneurs that are likely to build successful ventures are those that have high levels of self-efficacy. This research therefore, seeks to measure the impact of business incubation on the entrepreneurial mindset and entrepreneurial self-efficacy as perceived by the incubatees.

The structured of the literature review is as follows: Section 2.2 introduces the concept of entrepreneurship, Section 2.3 presents the concept of enterprise development and Section 2.4 discusses the construct of an entrepreneurial mindset. In Section 2.5, the interface between entrepreneurship, motivation and cognitions is explored, then Section 2.6 introduces the construct of general self-efficacy and Section 2.7 compares and contrasts general self-efficacy with

entrepreneurial self-efficacy. Finally, Section 2.8 proposes the concept of entrepreneurial learning and Section 2.9 concludes the chapter.

2.2 Entrepreneurship

The ability to continually innovate and to engage in an ongoing process of entrepreneurial action has become the source of competitive advantage and a lack of entrepreneurial action in today's global economy could be a recipe for failure. "The world is in the midst of a new wave of economic development with entrepreneurship and innovation as the catalysts" (Kuratko, 2009: p. 421). Entrepreneurship as a discipline has gained recognition across the world and is largely perceived as an important driver of economic development, poverty alleviation and employment creation (Bruton et al., 2013).

Additional employment opportunities and enhanced economic competitiveness in the global market could be acheived through entrepreneurship. (Kuckerts & Wagner, 2010). Entrepreneurship is the search process of alternative or new ventures as opposed to simply alternative employment opportunities (Lee and Venkataraman, 2006).

Entrepreneurship is the drive of innovation, technical change, and it generates economic growth (Di Gregorio, Musteen, & Thomas, 2008). This has led many countries to create institutions to promote and encourage entrepreneurial activities or have initiated actions to increase the volume of entrepreneurial activities in order to benefit from the resulting economic growth (Mueller & Thomas, 2000).

2.3 Enterprise development

Entrepreneurship is acknowledged as a catalyst for economic growth. This section discusses enterprise development, which is considered a vehicle for encouraging and facilitating entrepreneurial activity.

Enterprise development is the “assistance to entrepreneurs in support of creation, growth and survival of their ventures” (Koven and Lyons, 2003, p. 100). Enterprise development is a strategy that is intended to facilitate economic growth by providing entrepreneurs with a conducive environment where they can grow their ventures (Koven and Lyons, 2003). Lichtenstein et al. (2004) stated that the infrastructure for pursuing enterprise development ranges from non-profit, private, and public organisations. There are also entities that are referred to as ‘service providers’ or ‘assistance providers’.

Among the organisations tasked with pursuing enterprise development are youth entrepreneurship programs, microenterprise programs, business incubators, manufacturing networks, entrepreneurship networks, small business development centres, angel capital networks, venture capital clubs and funds, revolving loan funds, Service Corp of Retired Executives (SCORES) chapters, and technology transfer programs (Lichtenstein et al., 2004).

This research was focused on business incubators, in particular the impact of business incubation as perceived by incubatees in shaping their individual entrepreneurial mindset and entrepreneurial self-efficacy. Enterprise development is also a good tool for economic development because it targets development and not only growth, it has a strong local focus, and it injects immediate economic benefits for communities (Lichtenstein et al., 2004). When compared to alternative economic development strategies, enterprise development is considered more suitable, more cost effective an also more focused at community development (Dabson, Rist, & Schweke, 1994).

2.3.1 Emergence of entrepreneurial capitalism

In the previous section, enterprise development is defined and its efficacy as an economic development strategy was highlighted. The need for enterprise development emerged because of a fundamental shift in the structure of the world economy, from a managerial orientation to an entrepreneurial orientation. This section briefly discusses this fundamental shift.

Acs and Szerb (2007) discussed the emergence of entrepreneurial capitalism from the perspective of the American economy. They attributed past economic successes of the American economy to a fundamental change in the structure of the economy from managerial to entrepreneurial capitalism.

In entrepreneurial capitalism, markets, new technology and entrepreneurship are important fundamentals of the transition from managerial to entrepreneurship capitalism. Firm structures are more dynamic in entrepreneurial capitalism, markets and individual firms are replacing bureaucracies and innovation is different in an entrepreneurial setting compared to a managerial setting (Acs & Szerb, 2007).

In order to understand the emergence of entrepreneurial capitalism, Acs and Szerb (2007) investigated the historical context. They found that the interaction between economic growth and public policy dates back to the Mercantilist debates in the 17th century, whereas entrepreneurship was introduced in the recent past as a new topic into the relationship.

2.3.2 Government policy and entrepreneurship

Economic growth is related to public policy. This relationship was established by researchers and is well documented. This section locates entrepreneurship as an economic development strategy to public policy and by extension, enterprise development, as enterprise development is considered the vehicle for encouraging and facilitating entrepreneurship.

Since 1994, the new government of South Africa has embarked on an economic development strategy focused on creating an environment that will allow for the establishment and growth of SMMEs (Urban, 2010). In support of the economic strategy the Government then established institutions that will oversee and provide the SMMEs with the required support. The primary aim of the SMME support institutions was to bring all the existing smaller institution involved in SMME support into the realm of small-enterprise development (DTI, 2006).

By bringing all the smaller institutions together government was able to achieve the integration of different socio-economic policy areas, the integration of programmes within the public sector and between the public and private sectors, and the integration of the activities of different entrepreneurship and small enterprise promotion institutions (DTI, 2006).

These actions by the government play a central role in the strategic actions and institutional arrangements, and to the shift from uncoordinated to integrated service delivery (Urban, 2010).

Simply put, Government actions relate to the legal and regulatory environment, access to markets, access to finance and affordable business premises, the acquisition of skills and managerial expertise, access to appropriate technology, reducing the tax burden, and access to quality business infrastructure in poor areas or poverty nodes (Urban, 2010).

Acs and Armington (2006) cited in Acs and Szerb (2007) discussed policy formulation for an entrepreneurial economy. They examined policy formulation as it related to the creation of an economic society and argued that an entrepreneurial economy is different from a managerial economy because of the way in which it used entrepreneurs to facilitate knowledge spill overs.

Furthermore, they suggested that middle-income countries that aspire to become high-income countries should focus on skills development and must also import relevant technologies. They should do this by promoting enterprise development. Entrepreneurship in middle-income countries is generally at a low level (Acs & Szerb, 2007; Herrington et al., 2009). According to Acs and Szerb (2007), it is therefore, important to initiate enterprise development policies with a long-term mindset.

Dutz, Ordover and Willig (2000) studied the intricate linkages that could explain the levels of entrepreneurial activity within a country in relation to that specific country's low level of economic output. They suggested that in countries with low levels of economic activity, there are two primary economic growth policies.

- Entrepreneurial talent that exists with that Country needs to be discouraged from gravitating towards activities that yield low economic returns. This could be done by introducing and enforcing progressive legislative reforms such as the protection of intellectual property rights, and enforceable contracts.

- Introduction of regulations to prevent uncompetitive practices

Minniti (2008) agreed with Acs and Szerb (2007) in that countries with low economic activity must priorities skills development, import relevant technologies, and introduce enterprise development policies. Furthermore, Minniti (2008) added that in countries with high levels of economic activity should priorities new venture with the potential for high growth.

Minniti (2008) argued that the reduction of market entry regulations may not necessarily lead to the a an increase in the establishment of high growth potential new ventures, however, a favourable labour market regime coupled with free markets could create an environment suitable for the creation of high potential growth ventures.

Furthermore, at a micro-economic perspective, unsuccessful ventures are part of a healthy economic system, therefore Government should not introduce policies aim at preventing new venture failures but should rather allow market forces to determine the optimal amount of entrepreneurship (Holts-Eakin, 2000; Minniti, 2008).

Shane (2009) found that public policy is more often than not focused at the creation of more start-up companies, with the underlying assumption that these start-ups will lead to economic growth and employment creation. He argues that that type of policy direction is misguided in light of the fact that the majority of new ventures are only able to create employment opportunities, and and they do not contribute significantly to economic growth. Shane (2009) argued that if entrepreneurship is to be encouraged in a bid to achieving economic development and employment creation for entrepreneurs and indeed

communities, it should then be not about the number of new ventures created; rather it should be about the quality of high quality, high growth companies.

Shane (2009) concluded that policy makers should stop subsidising the formation of the typical start-up and focus on the subset of business with growth potential. However it is almost impossible to be able to identify new ventures that will ultimately be successful.

(Shane) 2009 suggested that it may be possible to identify new venture that operate in industries that only allow for a small chance for the venture to create significant employment opportunities. If these low growth potential ventures are removed and no incentives are made available for people to pursue them, Shane (2009) suggests that policy makers can improve the average performance of new businesses.

Social cognitive theory purports that there are certain cognitions that manifest as a result of a person's situational context. Furthermore, social cognitive theory points to a relationship whereby institutions precede entrepreneurial cognitions (Fiske & Taylor, 1984, cited in Lim, Morse, Mitchell, & Seawright, 2010). There are certain socio environmental factors, institutional arrangements such as political, social, and legal ground rules that are responsible for defining these entrepreneurial cognitions (North, 1990, cited in Lim et al., 2010).

Change in institutional environments allows for dissimilarities in the manner in which technology-focused entrepreneurs (Ahlstrom & Bruton, 2002) and venture capitalist (Ahlstrom & Bruton, 2006; Bruton & Ahlstrom, 2003; Bruton, Fried, & Manigart, 2005; Zacharakis, McMullen, & Shepherd, 2007) operate in different contexts and also has an impact on the governance of entrepreneurial firms (Steier, 2009).

Entrepreneurial decisions such as venture creation and venture growth are take in a given institutional context. Government policy informs the institutional context in which entrepreneurial decisions are made and can therefore have an influence in the distribution of entrepreneurial activities (Baumol, 1990; Bowen & De Clercq, 2008; Minniti, 2008).

The institutional environments prevailing within a country have the potential to either enable or restrain entrepreneurship in a country (Aldrich & Wiedenmayer, 1993, cited in Lim et al., 2010). There is a fundament requirement understand the unique institutional characteristics prevailing in a particular country and their impact on the entrepreneurial landscape (Baumol, 1990; Busenitz, Gomez, & Spencer, 2000, cited in Lim et al., 2010). A study McMullen, Bagby, and Palich (2008) indicated that entrepreneurial activity within a specific institutional context if positively related to free labour practices. They also found that high growth opportunity–driven entrepreneurial activity is positively related with property rights.

2.3.3 Business incubators

The previous sections established the linkages between entrepreneurship and enterprise development, which is the vehicle for encouraging and facilitating entrepreneurship. Enterprise development emerged as a result of a fundamental shift from a managerial to an entrepreneurial orientated economy. Research indicated that to promote the development of SMMEs in an entrepreneurial economy, government policy should support enterprise development policies. This section discusses business incubators, which are the tools for implementing enterprise development.

Incubators are organisations that facilitate entrepreneurs and early-stage start-up companies (Grimaldi & Grandi, 2005; Carayannis & von Zedtwitz, 2005). They are instrumental in accelerating the creation of successful entrepreneurial ventures (Bruneel et al., 2012). The concept of business incubation in South Africa began in 1995 when the Small Business Development Corporation initiated the ‘hives of industry’ (Lalkaka & Abetti, 1999, cited in Meru, 2011), which comprised a number of independent workstations that were put together to constitute a cluster of workshops (Meru, 2011).

Business incubators are mostly publicly funded, in accordance with government policy, making business incubators the the primary enablers of economic development growth programmes (Bruneel et al., 2012; Grimaldi & Grandi,

2005). Business incubators provide support to new ventures with the intention that they will develop into sustainable ventures, and their support entails several dimensions such as office space, shared resources, business support, and access to networks (Bergek & Norrman, 2008; Hackett & Dilts, 2004).

There are a number of obstacles that business incubators must overcome. These obstacles continuously force business incubators to adapt their operating strategies (Vanderstraeten & Matthyssens, 2012). These obstacles are related to issues such as that there is a large number of organisations that provide similar assistance (Becker & Gassmann, 2006; Von Zedtwitz, 2003). This has led to the term 'business incubator' being loosely utilised to refer to all organisations that offer business related assistance (Aernoudt, 2004).

There number of organisations operating in the business incubation space has experienced considerable growth (Bruneel et al., 2012). Vanderstraeten and Matthyssens (2012) cited the National Business Incubation Association, which estimates that between 1998 and 2006, the number of North American incubators had almost doubled to approximately 1 400, with developing and emerging countries showing similar growth (NBIA, 2013).

Smith and Zhang (2012), Allen and McCluskey (1990) and Hackett and Dilts (2004) found that the intangible elements of a business incubator are as important as the alongside the tangible elements. Business incubators provide more than facilities and support services, they provide an environment in which new ventures can learn and grow in relative safety, gradually accumulating the confidence and credibility required for successful and sustainable business (Smith & Zhang, 2012). The intangible elements are what differentiate incubators from other purely property-based initiatives (Smith & Zhang, 2012; Hackett & Dilts, 2004; Peters et al., 2004).

There is a view that the benefits of business incubators are claimed mostly by its practitioners in their publications (NBIA, 2011, cited in Bruneel et al., 2012). Massey et al. (1992) and Phan et al. (2005, cited in Bruneel et al., 2012) reported on conclusion of their studies that there is a lack of document studies to

support the claims made by incubators related to their contributions to economic development and employment creation. Research by Colombo and Delmastro (2002), Rhothaermel and Thursby (2005a, 2005b) and Pena (2004) also could not find support that business incubators had contributed to the interaction between university and industry, innovation activity, or firm performance.

Remedios and Cornelius (2003) observed that though incubators organisations was increasing in terms of their numbers, it was not clear whether incubators achieved their goals or what their impact was on the tenant. There was little evidence showing how incubated businesses thrive in the incubator, despite the fact that much entrepreneurial literature on new business development had been written (Voisey, Gornall, Jones, and Thomas, 2006).

The lack of evidence of the contribution of business incubators can be attributed to the lack of theory building studies that can be used to consistently analyse business incubators activities (Hackett & Dilts, 2004). Bruneel et al. (2012) suggested that to understand how the value proposition of the business incubator has evolved, it is important to analyse and understand their contribution to the success of incubated ventures.

Entrepreneurship is the core foundation for sustainable and meaningful economic development for all level of economic development (Bruton et al., 2013; Carayannis & von Zedtwitz, 2005). Business incubators have fulfilled a catalytic role for new venture creation and grow (Carayannis & von Zedtwitz, 2005), they assist ventures by providing them with business support and guidance in the process of venture creation and growth (Grimaldi & Grandi, 2005).

The notion that business incubators have fulfilled a catalytic role for new venture creation and growth could potentially be applicable to under developed economies. In under developed economies, incubatees could provide relief through their vast knowledge and experience (Carayannis and von Zedtwitz, 2005).

Incubators offer different services to the incubated ventures, these services depend on the incubator's competitive scope, strategic objectives, and the type of services available (Carayannis & von Zedtwitz, 2005; Grigorian, Ratinho, & Harms, 2010). This is what Smith and Zhang (2012) categorise as the intangible elements of business incubators. Porter (1986) identified vertical scope, segment scope, geographical scope, and industry focus as the main elements of competitive scope.

The scope dimensions identified by Porter (1986) are the main differentiators between incubators and other business support service providers, these also assist to differentiate between incubators themselves (Carayannis & von Zedtwitz, 2005; Carayannis, Samara, & Bakouros, 2011). Incubators also have different objectives for providing assistance to new ventures; their objectives could either be profit making or providing a social service (non-profit) (Allen & McCluskey, 1990; Porter, 1986). These objectives inform the operating model of the incubator and the incubator's business plan (Allen & McCluskey, 1990; Carayannis & von Zedtwitz, 2005; Porter, 1986).

Von Zedtwitz, (2003), Morel-Guimaraes, Hosni, and Khalil (2005) identified what they referred to as the most common types of incubators as follows:

[1] Regional business incubators;

[2] University incubators;

[3] Independent commercial incubators;

[4] Company-internal incubators; and

[5] Virtual incubators.

Incubators that have a strong non-profit motive are the regional business incubators and university incubators. Incubators that have a strong for profit motive are independent commercial incubators, company-internal incubators and virtual incubators (Bergek & Norrman, 2008; Carayannis & von Zedtwitz, 2005).

The long term objectives of all incubators are economic. However, for the incubators that have a non-profit motive, the financial gains are normally realised by their parent organisations. This makes it challenging to ascertain the actual role of the incubator to the success of the parent organisations (Carayannis & von Zedtwitz, 2005; Morel-Guimaraes et al., 2005; von Zedtwitz, 2003).

Von Zedtwitz, (2003), Morel-Guimaraes et al., (2005) identified the following services as central to incubation:

- *Access to physical resources:* Incubators offer office space, furniture, computer network, security and other amenities to do with physical infrastructure.

- *Office support:* In addition to infrastructure, incubators maintain efficient operation of basic office support such as secretarial and reception services.

- *Access to financial resources:* Incubators offer access to venture capital. This is normally a combination of private funds and outside capital, invested by business angels, venture capitalists or local institutions and companies.

- *Entrepreneurial start-up support:* Entrepreneurs may sometimes be stronger in technology and business vision, but could lack organisational, management and legal skills. Incubators guide entrepreneurs through the necessary steps a newly founded company must take. Incubators provide management coaching support, helping entrepreneurs develop and apply leadership and management skills. Many incubator managers, however, have not been able to provide real value added in start-up coaching.

- *Access to networks:* Incubators are able to identify and leverage key individuals for the success of their start-ups. Entrepreneurs usually do not have the network that an incubator has taken a long time to create. Incubators can bring in individuals with the right skills to a start-up's business.

Carayannis & von Zedtwitz (2005) provided a definition of incubators based on the services that incubators provide. They ascertained that incubators that provide all of the five services should be considered as incubators in the rue sense of the word. They considered those incubators that provide only four of the five services as incubators in the weak sense of the word incubator. Those organisations that provide less than four of the services should not be considered as incubators at all.

A modified definition of business incubators was proposed by Buys and Mbewana, (2007, p. 356), “business incubators are organisations that provide protected environments for business start-ups”. Buys and Mbewana (2007) agreed with Carayannis and von Zedtwitz (2005) that the term incubator describes a variety of organisations that assist entrepreneurs by providing them with an environment that enables them to create their ventures and to grow them into successful businesses.

Although there is a variety of organisations that are referred to as incubators, business incubators however are unique in terms of the services they provide. Business incubators provide a carefully designed systematic process that targets specific needs of the venture and the entrepreneur (Buys & Mbewana, 2007).

The business incubator may offer office space at affordable rates that needs to be vacated at an agreed point in time, office assistance services that could be shared among the incubator tenants, and access to venture funding. Further service that are directed at the personal growth of incubatees may also be offered such as business counselling, business support, venture capital, and networks (Bergek & Norrman, 2008; Buys & Mbewana, 2007).

Buys and Mbewana (2007) agreed with Lichtenstein et al. (2004) in that not all incubators are successful, the conditions that contribute their success and also to their failure should be investigated. They listed eight primary factors that determine the success of the incubators in the South African context, which are strongly correlated with each other. Buys and Mbewana (2007) listed the following as the primary success factors:

[1] Availability of science and technology;

[2] Access to Finance;

[3] Qualified entrepreneurs;

[4] Involvement of stakeholder;

[5] Conducive public policies;

[6] Incubator management competence;

[7] Sustainability of business plan; and

[8] Access to networking.

Buys and Mbewana (2007) combined these variables into a single independent variable and renamed it 'conducive environment' They also introduced three other variables namely:

[1] The incubator business plan must be detailed;

[2] The selection criteria of the incubator must be stringent; and

[3] The incubator must select an experienced advisory board.

Their study was conducted in a different context, compared with the study by Lichtenstein et al. (2004). However, both studies highlighted the important role of the entrepreneur in the success of enterprise development although they were not specific regarding the role.

There are three types of incubation processes (Finer & Holberton, 2007; Hackett & Dilts, 2004; Thompson & Downing, 2007); first, an incubation process that involves the diagnosis and treatment of business problems, with the aim of lowering the early-stage failure rate. Second, an incubation process aimed at creating new businesses through the development of new entrepreneurs. These entrepreneurs want to develop/commercialise their talent and ideas. Third, the incubation process, which involves spin-offs. In this case, the incubatee may

have left a company either permanently or on sabbatical with the aim of developing a product or service with the company, which is complementary or supplementary to the product or service being provided by his or her original employers.

Stephens and Onofrei (2012) affirm the work done by Buys and Mbewana (2007) and Lichtenstein et al. (2004). Business incubation policy and practice are primarily focused on developing a supportive environment by providing access to opportunities, resources and support services (Stephens & Onofrei, 2012). Poor management practices and a lack of capital are the main reasons for the failure of business start-ups (Stephens & Onofrei, 2012).

Hackett and Dilts (2004, p. 61) proposed that efforts directed at studying the functioning of the incubator must adopt a holistic approach. These efforts must consider that incubators are more than facility providers, they include a network of individuals and organisation that facilitate the process. In order to adequately measure the outcomes of an incubator on the incubatees, it is important to consider the complexities brought about by the process itself and the network of both individuals and organisations involved.

Stephens and Onofrei (2012) confirmed the findings of Hackett and Dilts (2004) that incubators provide more than just facilities to incubatees, the services provided by the incubator have an impact on the profession and personal growth of the incubatees. The impact of incubator on the professional and personal development of the incubate needs to be measured and utilised to inform the design of the incubation process (Stephens & Onofrei, 2012).

Peters et al. (2004) proposed a model that explained how incubators facilitate the entrepreneurial process (Depicted in Figure 2). Their model focused on the impact of the services offered by incubators. Whilst they did not address all the services offered by the incubator, the included infrastructure, coaching, and networks on their model. The model investigated the the graduation rates of incubatees given the presents of the incubator services. They tested their model

among three different types of incubators namely for-profit, non-profit, and university based incubators.

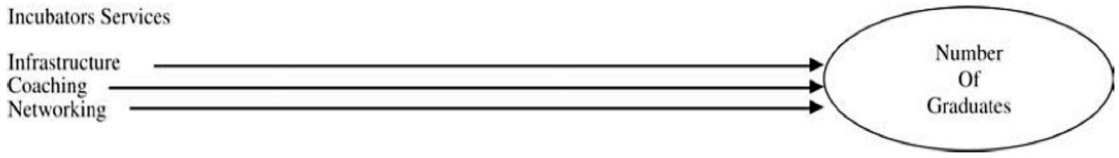

Figure 2: Relational model explaining factors affecting the graduation rate of tenants in incubation centres

(Peters et al., 2004)

They found that there was a significant difference in the number of companies graduating among the three types of incubators with different governance structures, with the highest number of graduates observed among the non-profit incubators. Coaching and access to networks were found to be the main distinguishing factors of the success of the incubators (Peters et al., 2004).

2.3.4 Measuring incubation outcomes

The previous sections established the linkages between entrepreneurship and enterprise development, government policy, and business incubators. Researchers agree on the role of incubators in providing an environment conducive to start-ups that want to grow into successful ventures. However, there is also a view that the benefits of business incubators are mostly claimed by its practitioners and that there is a lack of peer-reviewed studies on the benefits to both the venture and the entrepreneur. The following section highlights research conducted on the outcomes of business incubation.

Whilst proven to be challenging, efforts to measure the impact of business incubation on the incubatees present opportunities for improving the incubation outputs. These efforts were further frustrated by the lack of peer reviewed studies on the subject (Hackett and Dilts, 2004). Research conducted on the impact of business incubation tended to focus on the incubator and the

incubation process itself and has neglected the impact of incubation on the incubatees (Hannon, 2005).

Voisey et al. (2006) proposed that business incubators create other outputs in addition to profit and cost improvements that were termed 'hard' measures, which they termed 'soft' measures. Consistent with the work of Allen and McCluskey (1990, cited in Smith and Zhang, 2012) and Hackett and Dilts (2004), the soft measure of business incubation relate to the personal and professional development of the incubatees. They include business skills, networking and coaching. Furthermore, they posisted that the soft measures are difficult quantify and assess and are subjective.

Stephens and Onofrei (2012) found in their study that the majority of the respondents noted that it is difficult to quantify the soft benefits of business incubation, however these benefits augment the business development process. They therefore concluded that there is a need to measure the soft benefits of business incubation. Their study found that the personal development of incubatees is an important feature of business incubation.

2.4 Entrepreneurial mindset

The previous section discussed business incubation as it influences both the venture and the individual entrepreneur. It revealed that the intangible aspects of business incubation that pertain specifically to the individual entrepreneur are not well researched and understood, however it highlights that curricula could be designed that will equip entrepreneurs with the intangible aspects of business incubation.

The underlying assumptions surrounding the cognitive perspective is that an individuals' ability to act entrepreneurially arises because of that individuals' prevailing cognitions; however, the relationship between entrepreneurial cognitions and their antecedents is not extensively researched (Lichtenstein et al., 2004). Allen and Economy (2008) suggested that the mind of an entrepreneur has somehow been exposed through past entrepreneurial

experiences to some underlying aspects of the entrepreneurial mind. This suggests that the entrepreneurial mind could be 'trained'. This section focuses on the entrepreneurial mindset, it highlight the variables that makeup the entrepreneurial mind and its development.

Research on the entrepreneurial mindset indicates that entrepreneurs have a common thought process prevailing among serial entrepreneurs and nascent entrepreneurs (Allen & Economy, 2008). The tasks performed by a typical entrepreneur include spotting fundamental chances to create opportunities for their ventures, identifying gaps in markets and formulating strategies to dominate them, formulating strategies to increase their share of the market, recruiting and leading teams, and creating business networks.

Furthermore, Allen and Economy, (2008) reported that the mind of a typical entrepreneur has been exposed to the following aspects:

- Comfortable with ambiguity;
- Comfortable with uncertainty;
- Good with self-discipline;
- Good tenacity;
- Strong inner drive;
- Not afraid to fail;
- High level of personal responsibility; and
- Opportunity focussed.

Busenitz and Lau (1996) developed a cognitive model that integrated cognition with social context, cultural values, and personal variables. Figure 3 depicts a conceptual model of variables concerning the entrepreneurial mindset.

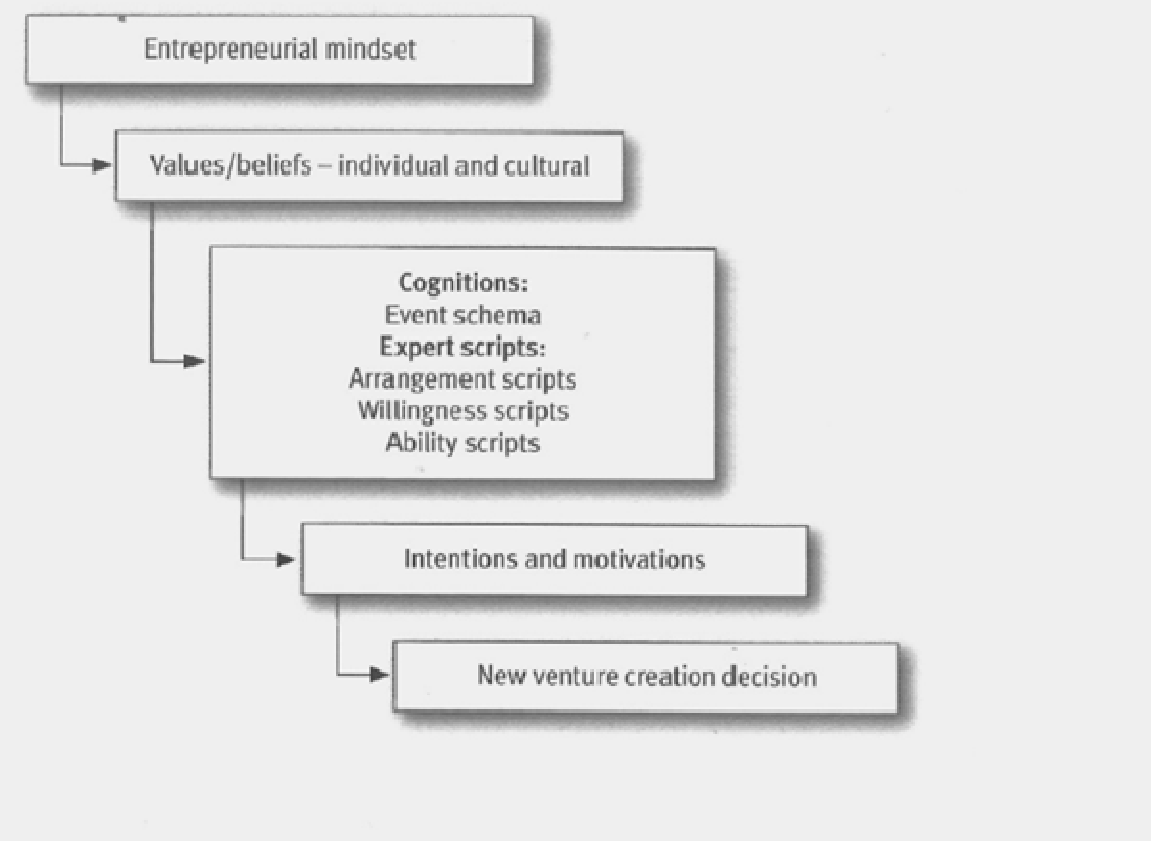

Figure 3: Conceptual model of variables concerning the entrepreneurial mindset

(Urban, 2011, p. 5)

The mindset of an entrepreneur requires the entrepreneur to be innovative in approach, to be willing and active when exploiting opportunities. The entrepreneur is said to achieve this by means of means of rapid sensing, acting and mobilised responses, in order to achieve a possible gain (Scheepers, 2009; Sheppard, Patzelt, & Haynie, 2009). Furthermore, an entrepreneurial mindset according to the works of MacGrath and MacMillan (2000) also requires that the entrepreneur consistently seeks opportunities with significant returns, must be forward thinking and focused on achieving goals, must display a desire for achievement and must be disciplined.

2.4.1 Entrepreneurial cognitions

Entrepreneurial cognitions are an integral part of the conceptual model of variables concerning the entrepreneurial mindset. Research indicates that curricula could be developed to assist entrepreneurs develop their cognitions.

Mitchell, Smith, Seawright, and Morse (2000), and Smith, Mitchell, and Mitchell (2009) described cognitions as the mental maps in the entrepreneurs' mind regarding the contacts, relationships, resources, and assets necessary to inform the new venture decision-making.

They operationalised the expert scripts as follows:

- *Arrangement scripts* deal with the contact, relationships, resources, and any assets that are necessary to assist the entrepreneur in the process of forming a new venture.

- *Willingness scripts* deal with the the fictitious maps drawn in the mind of the entrepreneur that support the entrepreneurs' commitment to the idea of creating a venture.

- *Ability scripts* consists of the knowledge structures that the entrepreneur has that assist the entrepreneurs' capabilities, skills, knowledge, norms and attitudes required for new venture creation (Urban, 2010).

The application of scripts when the entrepreneur makes a decision to create a venture requires the correct pairing of scripts and in the correct sequence (arrangement, willingness and ability). The entrepreneur requires the ability move in between these scripts with ease in order to master the process of venture creation. While arrangement scripts are required for new venture creation, they are not sufficient on their own. Willing scripts are also required in order for the entrepreneur to have the motive to apply the arrangement script. The entrepreneur must also have ability scripts, if ability scripts are insufficient, the entrepreneur may lack the skills to apply the arrangement scripts (Mitchell, Busenitz, Bird, Gaglio, McMullen, Morse, and Smith, 2007).

Cognition is “the process through which information is entered into memory, processed, and retrieved for later use” (Baron, 2008, p. 328; Forgas, 1995; Isen, 2002, cited in Arora et al., 2011, p. 360; Neisser 1967, p. 4, cited in Urban, 2011, p. 6; Urban, 2010).

As mentioned above, entrepreneurs use mental scripts in the process of making a decision to embark on a new venture (Urban, 2010). Cognitions manifest as artificial structures in the minds of individuals, these artificial structures are knowledge structures within the minds of individuals that are used as scripts. The mental scripts in the individuals’ minds act as mental maps that form the antecedents of making decisions (1987, cited in Urban, 2010; Urban (2011).

The entrepreneurial cognitions are regarded as the major differentiating factor between entrepreneurs and business managers (Baron, 2004). Entrepreneurial cognitions are also considered as the major differentiating factor of the abilities of entrepreneurs to identify opportunities (Krueger, 2000), and also in the decision to exploit opportunities by creating a venture (Mitchell et al., 2000) to non-entrepreneurs.

Urban (2011, p. 6) proposed that

> …research in entrepreneurial cognitions is about understanding how entrepreneurs use simplifying mental models to piece together previously unconnected information that helps them to identify and invent new products or services, and assemble the necessary resources to start and grow businesses as well as pursuing opportunities or not.

There has been significant developments made in the entrepreneurial cognitions literature, particularly the relationship between cognitions and the process of making entrepreneurial decisions (Baron, 2004, Mitchell et al., 2007; Mitchell, Busenitz, Lant, McDougall, Morse, & Smith, 2002; Mitchell, Smith, Morse, Seawright, Peredo, & McKenzie, 2002). However, there has been insufficient studies focusing on the relationship between entrepreneurial cognitions and their antecedents (Lim et al., 2010).

Research focussing on the role of cognitions in the entrepreneurial processes can make a meaningful contribution to the study of entrepreneurship (Allinson, Chell, & Hayes, 2002; Baron, 1998; Mitchell, Busenitz et al., 2002). Research into entrepreneurial cognitions has enabled educators, practitioners and researchers to understand the thought processes entrepreneurs engage in when undertaking the entrepreneurial process (Gregoire, Noel, Derby, & Bechard, 2006). Furthermore, entrepreneurial cognition perspective allowed researchers to undertake studies that allowed them to accumulate sufficient theory and empirically testable approaches for explaining the role of the entrepreneur in the entrepreneurial process (Urban, 2011; 2013).

There is justification in the suggestion that entrepreneurship attracts individuals with identical mindsets (Urban, 2010). Research by Mitchell, Smith et al. (2002) found that the process of identifying opportunities, starting a venture and growing a venture imparts the same experiences and knowledge to entrepreneurs, moreover it is not influenced by the entrepreneurs' cultural background, and place of origin. Urban (2010, 2011), Smith et al. (2009) suggested that entrepreneurs appear to have a unique knowledge embedded in their minds regarding the formation of new ventures that non-entrepreneurs do not appear to share.

2.4.2 Cognitive theory, agentic theory and entrepreneurship

Agentic theory emphasises the human aspect of entrepreneurship. In line with the research on business incubation, the human aspect of business incubation is considered critical by researchers. Self-efficacy is embedded in the broader social cognitive theory. To aid the understanding of the nature and functional properties of self-efficacy, the next section highlights the main tenets of social cognitive theory.

As mentioned above, individuals have a critical role to play in the process of venture creation, it is this critical role that has provided justification for investigating the linkages between cognitive theory and entrepreneurship. Individuals are important actors in the entrepreneurial process, therefore human

agency play an important role in entrepreneurship (Urban, 2013). Agents are individuals that change the status quo by directing resources. Entrepreneurs drive the entrepreneurial process through their actions and motivation to pursue opportunities (Bandura, 2001).

The cognitive behaviour of individuals can be linked to a specific domain. In the entrepreneurship domain, the cognitive behaviour of entrepreneurs is said to be depended on the drivers that lead the individual to pursue entrepreneurship (Minniti and Bygrave, 2003). When the cognitive abilities of an entrepreneur are sufficiently developed, the entrepreneurs can be expected to display higher levels of self-efficacy (Gist & Mitchell, 1992).

The underlying foundation of Social cognitive theory is the agentic perspective (Bandura, 2006; 2008).Social cognitive theory advocated for a causal structure that has its foundations on a triadic reciprocal causation (Bandura, 1986). Figure 4 indicates a triadic codetermination. The figure indicates that human behaviour is governed by the interactions between personal, environmental and behavioural determinants (Bandura, 2012).

Individuals have an important role in determining the direction their personal lives traverse, this is driven by the notion that an individuals' self-efficacy is an important constituent of the intrapersonal influences that are some of the determining conditions in the interplay between personal, environmental and behavioural determinants (Bandura, 2012).

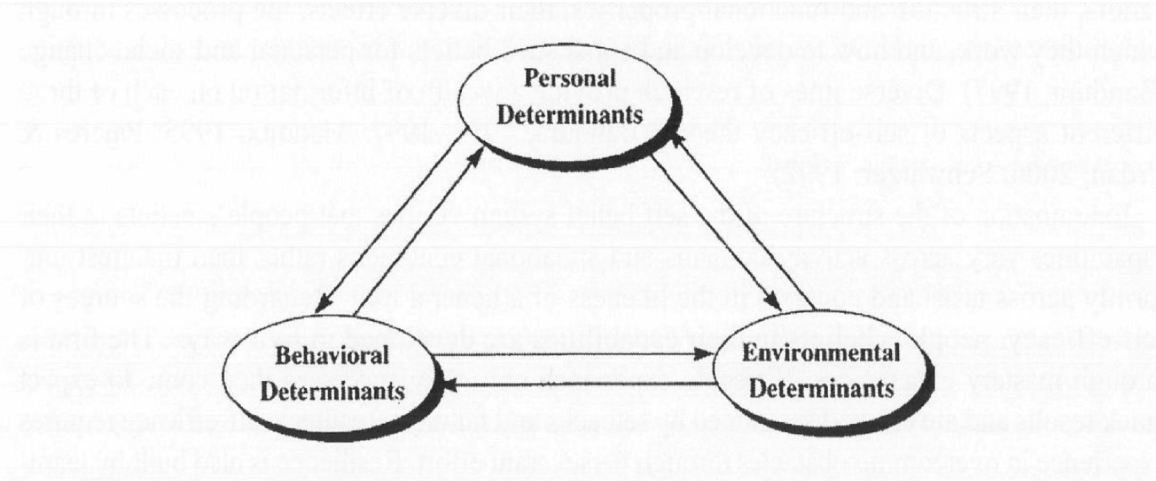

Figure 4: Schematisation of triadic reciprocal determination in the causal model of social cognitive theory

(Bandura, 2012, p. 12)

Social cognitive theory provides the foundation of self-efficacy beliefs (Bandura, 1997; Pajares & Urdan, 2006). An individuals' belief in their abilities to perform certain tasks is depended on the domain and the context that individual finds themselves in (Bandura, 2012). An individuals' beliefs in their capabilities are developed through mastery experiences, social modelling, social persuasion and choice processes, in relation to the sources of self-efficacy (Bandura, 2012).

Figure 5 indicates self-motivation and self-regulation of action based on a socio-cognitive structural model. In the model self-efficacy is indicated as having a central role because it influences behaviour directly and also through the other determinants of outcome expectations and sociostructural factors (Bandura, 2012).

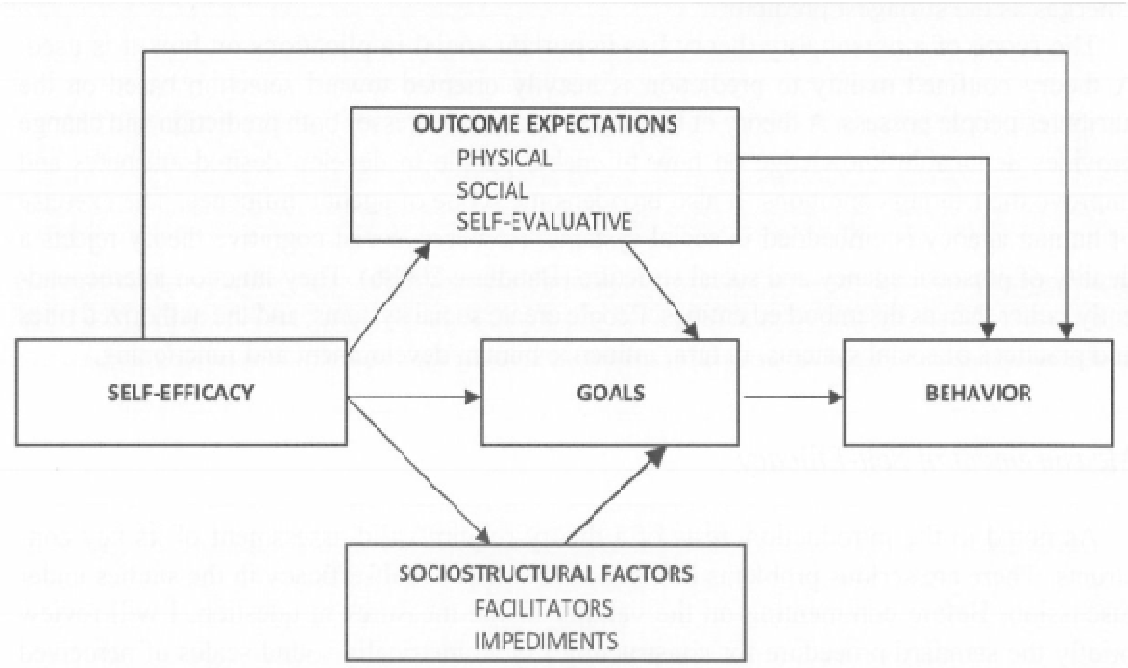

Figure 5: Structural paths of influence wherein perceived self-efficacy affects motivation and performance

(Bandura, 2012, p. 14)

2.4.3 Cognitive biases

Individuals' are subjected to bias of their cognitive processing, and behavioural outcomes based on their beliefs, attitudes, and attributes of personality (Fiske & Taylor, 1991, cited in Arora et al., 2011). These biases are referred to as cognitive biases, cognitive biases involve thought processes that are obscured from the truth by incorrect assumption and inferences made by individuals based on personal experiences and feelings that involve erroneous inferences or assumptions (Forbes, 2005a; Mitchell, Busenitz et al., 2002). Entrepreneurs are said to be susceptible to cognitive biases given the nature of entrepreneurial decisions they face on a daily basis (Cooper, Woo, & Dunkelberg, 1988; Forbes, 2005a).

Entrepreneurs displayed a higher level of susceptibility to certain types of cognitive biases as compared to non-entrepreneur business managers (Camerer

& Lovallo, 1999; Cooper et al., 1988; Johnson & Fowler, 2011; Forbes, 2005a). Forbes (2005a) identified the overconfidence bias as a specific bias for which entrepreneurs tended to exhibit. The overconfidence bias is related to the to the tendency of individuals to overemphasise the correctness of their initial estimates in answering moderate to difficult questions (Busenitz & Barney, 1997; Cooper et al., 1988; Forbes, 2005a; Olson, 1986).

There is no research that explains the exact reasons for entrepreneurs to exhibit the overconfidence bias (Forbes, 2005a; Gudmundsson and Lechner, 2013). However, there are speculations surrounding the reasons for entrepreneurs to exhibit overconfidence bias ranging from the fact the entrepreneurs are a unique group of individuals that tend to overestimate their abilities, the tasks involved in the entrepreneurial process involve information overload, a lot of uncertainty and pressure to deliver.

The tendency of entrepreneurs to exhibit the overconfidence bias is a behavioural issue that can be rectified (Forbes, 2005a; Johnson and Fowler 2011). These findings suggest that entrepreneurs can be trained by subjecting them to appropriate interventions designed to influence their behaviour (Forbes, 2005a; Gudmundsson & Lechner, 2013).

2.4.4 Metacognition

Metacognition represent the cognitive basis of the entrepreneurial mindset (Haynie, Shepherd, Mosakowski, & Earley, 2010). Metacognition represent the ability of individuals to control their own learning and cognition, to enable them to employ different cognitive strategies in response to a changing environment (Flavell, 1979; Flavell, 1987, cited in Haynie et al., 2010; Schraw & Dennison, 1994).

Cognitions research provides an opportunity for further studies into the human aspects of entrepreneurship, it provides a framework whereby the memory, learning, problem identification, and decision-making abilities of the entrepreneur can be re-examined (Mitchell, Busenitz et al., 2002, p. 93). Haynie and Shepherd

(2009, p .695) defined cognitive adaptability as “the ability to effectively and appropriately change decision policies given feedback from the environmental context in which cognitive processing is embedded”.

Haynie and Shepherd (2009) suggested a different approach to the measure of cognitive adaptability that the approach needs to focus on cognitive processes by adopting metacognitive theory as opposed to using the motivational approach. Melot (1998) and Schraw and Dennison (1994, cited in Haynie & Shepherd, 2009) indicated that a metacognitive approach of resolving a task or a situation requires:

- That there is a recognition of the fact that the is more than one decision framework that could be employed to draft a response; and
- That there is a good chance that the conscious process will be engaged in considering the different alternatives available.

Metacognition does not form part of other cognitive constraints on learning, the individuals’ development of metacognitions and their ability to apply metacognitions cannot be predicted from domain knowledge (Haynie & Shepherd, 2009).

2.4.5 Proposition 1

Incubatees perceived a positive impact between incubation and their entrepreneurial mindset.

2.5 Developing cognitive mindsets

The research accumulated over the years pertaining to entrepreneurial behaviour has not been utilised to inform the design of entrepreneurial education. This can be attributed to the disjuncture that prevails between researchers that are focused of theory building and those researchers that are focused on improving entrepreneurial education (Dueing, 2008).

Applied research conducted pertaining to the cognitive skills of entrepreneurs could assist in developing training guidelines for entrepreneurs (Urban, 2011). If entrepreneurs have specialised cognitive skills and if these cognitive skills can be taught or better yet if they could be improved on, then there should be an emphasis on research aimed at designing interventions intended to build these cognitive skills (Urban, 2011). The above discussion therefore leads to the following proposition:

2.5.1 Proposition 2

Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

2.6 Self-efficacy

Research indicates that there is a relationship between entrepreneurial mindset and self-efficacy, and that self-efficacy is an antecedent for entrepreneurial action. This is supported by the findings of Gist and Mitchell (1992) that individuals will display higher levels of self-efficacy in performing a specific task when their ability cognitions are sufficiently developed.

Self-efficacy is the “beliefs in one’s capabilities to mobilise the motivation, cognitive resources, and courses of action needed to meet given situational demands” (Wood & Bandura, 1989, p. 408). Higher levels of self-efficacy are an important indicator of entrepreneurial action (Bandura, 2006; Zhao, Hills & Seibert, 2005).

Self-efficacy could be used to predict and explain possible human behaviour as it determines the choices an individual makes, the individuals’ level of effort in executing a task and the perseverance of an individual to see a task through (Chen, Gully & Eden, 2004, p. 966). Individuals with high self-efficacy for a certain task are more likely to pursue and then persist in that task than those individuals who possess low self-efficacy (Bandura, 1997, p. 966).

The concept of self-regulation emanates from the socio-cognitive perspective. The fundamental principle of self-regulation is that individuals' tend to look for pleasure instead of pain assuming equality of all variables (Crowie & Higgins, 1977, cited in Tumasjan & Braun, 2012; Higgins, 2000). Self- regulation itself is governed by the regulatory focus theory (Higgins, 1998). Regulatory focus theory puts forward promotion focus and prevention focus as the primary methodologies individuals employ in an effort to control their own behaviour. Individuals that are promotion focused emphasise growth and advancement as their motive and individuals that are prevention focused emphasise security and safety as their motive (Tumasjan & Braun, 2012).

Self-efficacy plays an important role in the process of self-regulation. There has been misconceptions regarding this role, hence in an effort to prevent further misconception, a distinction must be drawn between the latent construct that has a causal effect and its observed reflection in a measure of self-efficacy beliefs (Bledow, 2012). The latent construct in the process of measuring must be kept at a constant number however, although the values on a measure are fixed, the latent construct is dynamic variable (Bledow, 2012).

A latent construct must be associated with a dynamic process to have an effect that results in a change within an individual. For a latent construct to be the cause of change in an individual it must affect both the outcome and the antecedents (Borsboom, Mellenbergh, & van Heerden, 2003). When a latent construct is being measured, variation on the dynamic process will result in variation in the measure (Borsboom, Mellenbergh, & van Heerden., 2004).

Self-efficacy theory (Bandura, 1977; 1997) is an integral part of self-regulation (Baumeister & Vohs, 2004). Individuals with high levels of self-efficacy, "through ingenuity and perseverance, come up with ways of exercising some measure of control in environments that contain limited opportunities and many constraints" (Bandura & Wood, 1989, p. 806).

Individuals that have high levels of self-efficacy have been observed to be highly energetic, aspire to achieve challenging goals, are dedicated to achieving

results, have the ability to change strategies when faced with obstacles and failure (Bandura, 1997). Individuals with high levels of self-efficacy generally are enthusiastic about entrepreneurial opportunities and are likely to be in the process of opportunity recognition (Ardichvili, Cardozo, & Ray, 2003).

The findings of the study by Ardichvili, Cardozo, & Ray (2003) are supported by the findings of research indicating that individuals with high levels of self-efficacy tend to focus on exploiting entrepreneurial opportunities with significant potential for growth, and individuals with lower levels of self-efficacy are more concerned with avoiding risk, they opt for lower risk low potential growth opportunities (Krueger, 1993; Kruger & Brazael, 1994; Neck & Manz, 1992; 1996 cited in Tumasjan & Braun, 2012).

Research by Bandura's (1977; 1997), Tumasjan and Braun's (2012) studied self-efficacy according to specific domains. Their studies classified self-efficacy into creative self-efficacy and entrepreneurial self-efficacy. Bandura's (1977; 1997) advocated for this approach, he found that task specific self-efficacy produced more reliable results when predicting behaviour. Moreover, domain specific self-efficacy such as entrepreneurial self-efficacy is an important predictor of opportunity recognition and new venture growth (Baum & Locke, 2004, Baum, Locke & Smith, 2001, Forbes, 2005b, Hmieleski & Corbett, 2008; Park, 2005, cited in Tumasjan & Braun, 2012).

There is disagreement between self-efficacy beliefs and action which emanate from the methodology used to assess self-efficacy (Anastasiou & Domna, 2013; Bandura, 2012). Another issue of disagreement relates to the performance locus (Anastasiou & Domna, 2013; Bandura, 2012; Stajkovic & Luthans, 1998). Stajkovic and Luthans, 1998 and Bandura (2012) identified issues of disagreement related to the performance locus as issues pertaining to the assessment of performance, and issues pertaining to unclear performance targets.

2.7 Entrepreneurial self-efficacy

The previous section revealed self-efficacy as an important antecedent of entrepreneurial action. Furthermore, it advocated using task specific rather than general measures of self-efficacy when studying entrepreneurial behaviour. Previous research has demonstrated that entrepreneurial self-efficacy, rather than general self-efficacy, plays an important role in opportunity recognition and new venture growth.

In keeping with Bandura's (1977; 1997) assertion that self-efficacy should be treated as a domain specific construct, entrepreneurial self-efficacy is an important antecedent to new venture intentions (Boyd and Vozikis, 1994; Chen et al., 1998; Krueger and Brazeal, 1994). These authors acknowledge that although the literature on entrepreneurial self-efficacy is robust, there are some obstacles that prevent the development and application of the construct. They identified the obstacles as follows:

- There are some sections within the research community that are still questioning the need for a domain specific expression of self-efficacy;
- There is no acceptable methodology for capturing the dimensionality of the entrepreneurial self-efficacy construct; and
- The bulk of previous research on entrepreneurial self-efficacy utilised students and practicing entrepreneurs for their samples.

The fundamental differences between entrepreneurs and business managers can be highlighted by their respective entrepreneurial mindsets (Chen et al., 1998; De Noble, Jung & Ehrlich, 1999; Markman et al., 2002). Entrepreneurs that are high on entrepreneurial self-efficacy are likely to successfully grow their ventures (Baum et al. (2001) and Baum and Locke (2004). Moreover, entrepreneurs high on entrepreneurial self-efficacy that are operating a new venture are likely improve the performance of that venture (Forbes, 2005b; Hmieleski and Corbett, 2008).

2.7.1 One-dimensional versus multi-dimensional measure of entrepreneurial self-efficacy

Researchers have not been able to formulate and agree a common methodology for measuring the dimensionality of the entrepreneurial self-efficacy construct (McGee et al., 2009). However, there are some researchers that are of the opinion that entrepreneurial self-efficacy is better measured as a multi-dimensional construct (Arenius & Minniti, 2005; Baum & Locke, 2004; and Baum et al., 2001).

Researchers that previously attempted to measure entrepreneurial self-efficacy utilised a scale that required respondent to reply either yes or no pertaining to their confidence of starting a venture (McGee et al., 2009). Furthermore, researchers that attempted to measure the dimensionality of the entrepreneurial self-efficacy construct did not analyse the respective dimensions of the scale, they relied on a total entrepreneurial self-efficacy score (Chen et al., 1998; De Noble et al., 1999; Forbes, 2005b; Zhao et al., 2005). A reliance on the total score does not allow the researcher to understand which aspects of the entrepreneurial self-efficacy construct are more influential (McGee et al., 2009).

Research by Mueller and Goic (2003) provided justification to the notion that the underlying dimensions of the entrepreneurial self-efficacy construct require examination. Mueller and Goic (2003) adapted a four-phase venture creation process model originally proposed by Stevenson, Roberts, and Grousbeck (1985), and constructed a separate measure of entrepreneurial self-efficacy for specific tasks associated with each of the four phases of the process namely searching, planning, marshalling, and implementing. Mueller and Goic's (2003) reported that an individual's level of entrepreneurial self-efficacy varied by phase, empirically confirming the construct's multi-dimensional nature.

2.7.2 Students and small business owners versus nascent entrepreneurs

As mentioned above, the reliance of researchers on university students as test subjects on the bulk of the research on entrepreneurial self-efficacy can be

considered as a major impediment to the development of the construct (McGee et al., 2009). There have been some studies that utilised small business owners and practicing entrepreneurs although the numbers are considered insufficient to represent a diversified sample (Baum & Locke, 2004; Forbes, 2005b; Markman et al., 2002).

Over and above the subject used in previous studies of entrepreneurial self-efficacy, there were even fewer studies that utilised nascent entrepreneurs McGee et al. (2009). The fundamental problem with the exclusion of nascent entrepreneurs in the study of entrepreneurial self-efficacy resides with the notion that entrepreneurial self-efficacy is an important antecedent of entrepreneurial action McGee et al. (2009). However, Mcgee et al. (2009) cautions that using students in entrepreneurial self-efficacy research is not necessarily a bad thing as students display nascent behaviour by engaging in entrepreneurship studies.

The views of Mcgee et al. (2009) regarding using students for entrepreneurial self-efficacy research were supported the work done by Peterman and Kenny (2003) that indicated that students input should not discounted in the study of entrepreneurial self-efficacy. Students can assist researchers in identifying appropriate interventions through education and training that will help to improve entrepreneurial self-efficacy (Peterman and Kenny, 2003).

According Aldrich and Martinez (2001, p. 43) nascent entrepreneurs are those individuals

> … who not only say they currently giving serious thought to the new business, but also are engaged in at least two entrepreneurial activities, such as looking for facilities and equipment, writing a business plan, investing money, or organizing a start-up team.

There is number of empirical studies that investigated nascent entrepreneurship (Arenius & Minniti, 2005, Carter, Gartner, Shaver, & Gatewood, 2003, Davidsson & Honig, 2003, Reynolds, Carter, Gartner, and Greene, 2004). However, the majority of the studies did not expressly investigate entrepreneurial self-efficacy as a variable that explains nascent behaviour (McGee et al., 2009). Studies that

have attempted to introduce entrepreneurial self-efficacy as a variable did not take into account the following (McGee et al., 2009):

[1] That there is a distinction between general self-efficacy and entrepreneurial self-efficacy when the construct is used to explain the process of venture creation;

[2] That entrepreneurial self-efficacy is a multi-dimensional construct in nature; and

[3] That nascent entrepreneurs are an import group for studying entrepreneurial self-efficacy.

2.7.3 Proposition 3

Incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy.

2.8 Entrepreneurial learning

Researchers have questioned the efficacy and benefits of entrepreneurial education (Clark, Davis, & Harnish, 1994; O'Connor, 2013; Wallenstein, 1993, cited in Zhao et al., 2005). The criticism of the benefits of entrepreneurial education have continues unabated even though the number of entrepreneurship formal education programs have continued to also increase in Universities in the United Sates (Duval-Couetil, 2013; Soloman, Duffy, & Torabishy, 2002).

Work by Kailer (2007), Storey (2000) and Duval-Couetil (2013) found that there is limited research evaluating entrepreneurship education, with such research aimed at understanding the student's attitudes to the program after its completion (Duval-Couetil, 2013; Karlsson & Moberg, 2013).

The research was conducted primarily using questionnaires that investigated the student's attitudes to the school, the entrepreneurship course, work placements and entrepreneurial activities engaged in (Kailer, 2007). There is also a lack of

longitudinal studies (Webber, Graevenitz, & Harhoff, 2009, cited in Karlsson & Moberg, 2013) and studies with control groups (Wilson, Kickul, & Marlino, 2007).

A study by Cox, Mueller, and Moss (2000) measured entrepreneurship self-efficacy before and after participation in an entrepreneurship course found a negative impact. The findings of the this study were confirmed in a study by Oosterbeek, Van Praag and Ijsselstein (2010) that confirmed the negative effects of entrepreneurship education on student's intentions to become entrepreneurs. Karlsson and Moberg (2013) and O'Connor (2013) concluded that these findings illustrate the need to study and evaluate the outcome of entrepreneurship education.

Entrepreneurial learning requires a hands on approach, methodologies of teaching such as classroom learning and examinations do not lead to entrepreneurial behaviour (Sogunro, 2004). Heinonen and Poikkijoki (2006) supported the view that a hands on approach is required to effectively teach entrepreneurship. Mentoring has been acknowledged as a primary mode of knowledge transmission and acquisition (Fielden & Hunt, 2011; Johnson, 2002; Merriam & Mohamad, 2000), with mentors supporting transformative experiential learning (Lee, 2007).

Newly formed ventures that were led by inexperienced entrepreneurs that were assigned a mentor were shown to have survived and became successful ventures (Deakins, Graham, Sullivan, & Whittam, 2008; Sullivan, 2000). A mentor can assist inexperienced entrepreneurs to gain self-confidence, and can assist to improve the entrepreneurs' management skills (Wikholm, Henningson, & Hultman, 2005, cited in Lefebvre & Redien-Collot, 2013) as well as entrepreneurs' ability to act entrepreneurially (Kent, Dennis, & Tanton, 2003; cited in Lefebvre and Redien-Collot, 2013).

Formal mentoring is a structured and organised program that is administered by third party business support organisations (Lefebvre & Redien-Collot, 2013). Business incubators area such organisations, they define relationship between the mentor and the entrepreneur, they facilitate a stringent entrepreneur

selection process using strict eligibility requirements, and predefine roles and responsibilities of mentors and entrepreneurs (Totterman & Sten, 2005).

2.8.1 Proposition 4

Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

2.9 Conclusion

The challenges of unemployment and inequality prevalent in South African have led the government to pursue an economic development strategy that calls for the creation of an enabling environment that will make it easier for SMMEs to be created and also to growth. The government has since established a number of institutions tasked with supporting SMMEs through enterprise development.

Enterprise development is an economic development strategy that aims to provide SMMEs with the necessary support to enable them to grow into successful. There is a variety of institutions that operate in the enterprise development space ranging from non-profit, private, and public organisations, and entities that are referred to as service providers or assistance providers. Business incubators were identified as one of the many organisations that form part of the infrastructure for pursuing enterprise development.

The concept of business incubation in South Africa began in 1995. It was constituted by bringing together a number of organisations with the intention of forming clusters. Incubators are organisations that facilitate entrepreneurs and early-stage start-ups. The funding mechanisms for business incubators vary from country to country but they are commonly funded by the state as a form of supporting government policy of making business incubators one of the primary drivers of economic growth programs (Bruneel et al., 2012).

The services offered by incubators are classified as both tangible and intangible. The intangible elements of incubation, differentiated incubators form other forms of business support such as property-based support (Smith & Zhang, 2012). The intangible elements of business incubation include mentoring and coaching of incubatees.

The literature revealed that business incubators assist new ventures to flourish, they also provide an opportunity for the entrepreneur to develop both from a personal and professional perspective. Furthermore, the impact the business incubator has on the venture and the entrepreneur need to be assessed and the findings used to inform the design of the business incubation process. The entrepreneurial mindset is said to distinguish entrepreneurs from non-entrepreneurs. Entrepreneurs are considered to have either been exposed to the elements that constitute an entrepreneurial mindset or they have mastered the aspects. The entrepreneurial mindset contains mental maps or scripts that entrepreneurs use in sequence in the process of venture creation.

Cognitive theory provides the vital linkages between entrepreneurial self-efficacy and the entrepreneurial mindset. Entrepreneurs high in entrepreneurial self-efficacy are likely to have a fully developed entrepreneurial mindset and therefore are likely to pursue lucrative entrepreneurial opportunities. There are interventions that an entrepreneur can be exposed to that will instil self-confidence in them that they can indeed accomplish the tasks requires to form and to grow a venture. The intervention can also through hands on experience expose the entrepreneur to the various elements of the entrepreneurial mindset.

The next chapter describes the research methodology that was followed to address the propositions that are put forward in the literature review.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter describes the academic literature consulted in order to formulate the propositions for this study. This chapter then provides a detailed description of the research methodology adopted in choosing the sample for this study, the research instrument utilised to gather data, the data gathering procedures followed, and the statistical methods used to respond to the propositions of this study. The research is a non-experimental cross-sectional study conducted using a questionnaire whereby quantitative data from respondents, chosen based on a purposive sample, was collected.

This chapter begins by giving an over view of research paradigm, this is followed by a discussion on the design of this research. The study population is described, followed by a discussion of the sampling methodology. The instrument is explained, followed by a discussion on the procedure for data collection.

This is followed by a review of the methodology for data analysis. The limitations of the study are identified followed by a discussion on validity and reliability of the study. The last two sections discuss common method biases affecting the study and then conclusions to the chapter are provided.

3.2 Research methodology/paradigm

Philosophical assumptions about the nature of reality, ways of knowing, and ethics and value systems inform what is referred to by social scientists as a paradigm (Wagner, Kawulich, & Garner, 2012; Gravetter & Forzano, 2012). The philosophical assumptions are ontology, epistemology and axiology (Patton, 2002). Epistemology represents the philosophical assumptions adopted in this study. According to Patton (2002) the assumptions refer respectively to what we believe about the nature of reality, how we know what we know, and what we

believe is true. A paradigm therefore leads to a methodology (Wagner et al., 2012; Gravetter & Forzano, 2012; Neuman, 2006).

Patton (2002) explained that ontology relates to whether it is believed that there is one verifiable reality or whether there exists multiple, socially constructed realities. Epistemology examines the nature of knowledge and truth, it makes enquiries such as, what are the sources of knowledge, how reliable are the sources, what can be known, and how does one know if something is true (Wagner et al., 2012; Gravetter & Forzano, 2012; Neuman, 2006). Furthermore, epistemology makes inquiries into the concept of belief. It raises questions such as, is a belief through knowledge, or is knowledge only that which can be proven using concrete data.

Ontology and epistemology assist to determine the assumptions and beliefs that frame a researcher's view of a research problem, how he/she goes about investigating it, and the methods he/she uses to answer the research questions (Wagner et al., 2012; Gravetter & Forzano, 2012;). Certain paradigms may be associated with certain methodologies, a positivistic paradigm typically assumes a quantitative methodology (Wagner et al., 2012; Gravetter & Forzano, 2012). The study is quantitative therefore, a positivistic paradigm is assumed.

3.2.1 Positivism

Positivism, also referred to as logical positivism, ascertained that the scientific method is the only way to establish truth and objective reality (Wagner et al., 2012; Gravetter & Forzano, 2012). It is based upon the view that science is the only foundation for true knowledge, and it claims that the methods, techniques and procedures used in the natural sciences offer the best framework for investigating the social world (Wagner et al., 2012; Gravetter & Forzano, 2012).

Positivism reflects a strict empirical approach in which claims about knowledge are based directly on experience, it emphasises facts and the causes of behaviour (Bogdan & Biklen, 2003). Positivism applies scientific methods to the study of human action and is therefore viewed as being objectivist. According to

Crotty (1998) objects have existence and meaning, independent of any consciousness of them. By the middle of the twentieth century, there was a shift from positivism to post-positivism (Wagner et al., 2012; Gravetter & Forzano, 2012).

3.2.2 Post-positivism

Post-positivism, also referred to as logical empiricism, describes a less strict form of positivism. Post-positivists support the idea that social scientists and natural scientists share the same goals for research and employ similar methods of investigation (Wagner et al., 2012; Gravetter & Forzano, 2012). Post-positivism is influenced by a philosophy called critical realism (Trochim, 2002, cited in Wagner et al., 2012).

It can be distinguished from positivism according to whether the focus is on theory verification (positivism) or theory falsification (post-positivism) (Ponterotto, 2005). The post-positivists, similarly to positivists, believe that there is a reality independent of thinking that can be studied through the scientific method (Wagner et al., 2012). However, critical realism recognises that observations may involve error and that theories can be modified (Trochim, 2002, cited in Wagner et al., 2012). In the current context, most research approaches and practices in social science fit better with the post-positivist category (Wagner et al., 2012; Gravetter & Forzano, 2012).

3.2.3 Ontology

On the question of what is the nature of reality, positivists ascertained that a single, tangible reality, which is relatively constant across time and setting, known as naïve realism exists (Wagner et al., 2012). They claimed that positivists believe that reality is objective and independent of the researcher's interest in it, is measurable and can be broken down into variables. Post-positivists concur that reality does exist, but maintain that it can be known only

imperfectly because of the researcher's human limitations known as critical realism (Wagner et al., 2012).

3.2.4 Epistemology

The nature of knowledge is inherent in the natural science paradigm for the positivist. Positivists view knowledge as those statements of belief or fact that can be tested empirically, can be confirmed and verified or disconfirmed, and are stable and can be generalised (Eichelberger, 1989, cited in Wagner et al., 2012). They believe that researchers only need the right data-gathering instrument or tools to produce absolute truth for a given inquiry.

The research approaches are quantitative and include experimental, quasi-experimental, correlational, causal comparative and survey designs. The techniques of gathering data are mainly questionnaires, observations, tests and experiments. Within this context, the purpose of research is to discover laws and principles that govern the universe and to predict behaviours and situations. Post-positivists believe that perfect objectivity cannot be achieved, but is approachable.

3.2.5 Axiology

All inquiries should be value-free for the positivists, researchers should use the scientific methods of gathering data to achieve objectivity and neutrality during the inquiry process (Wagner et al., 2012; Gravetter & Forzano, 2012). Post-positivists, however, modified the belief that the researcher and the subject of study were independent by recognising that the theories, hypotheses and background knowledge held by the investigator can strongly influence what is observed, how it is observed and the outcome of what is observed (Wagner et al., 2012; Gravetter & Forzano, 2012).

3.2.6 Methodology

The purpose of research is to predict results, test theory, or find the strength of relationships between variables or a cause-and-effect relationship in both the positivism/post-positivism paradigm (Wagner et al., 2012; Gravetter & Forzano, 2012). Quantitative researchers start with ideas, theories or concepts that are defined as they are used in the study to point to the variables of interest, and the problem statement at minimum specifies the variables to be studied and the relationship among them (Wagner et al., 2012; Gravetter & Forzano, 2012).

Moreover, variables are also operationally defined to enable others to replicate, verify and confirm results. Operationally defining a variable means that the trait to be measured is defined according to the way it is used or measured or observed in the study. Various methodologies include designs that are experimental, quasi-experimental, correlational, causal comparative, quantitative and randomised control trials research. Instruments/methods for gathering data include questionnaires, observations, experiments and tests (Wagner et al., 2012; Gravetter & Forzano, 2012).

Neuman (2006) stated that a positivist approach or paradigm means that the researcher starts by establishing the relationship between the input and the outcome by studying the available theory on the subject matter, this is then followed by the establishment of an instrument that will be used for measurement of the social. Furthermore, Neuman (2006) argued that the researcher does not get involved in the actual research, and does not influence a specific outcome, examining evidence and replicating other research in order to test empirically and confirm the laws of social life as outlined in a theory. This research utilised the quantitative research methodology approach. According to Cooper and Schindler (2011) the quantitative research methodology approach seeks to precisely measure variables.

The quantitative research methodology was suitable for this research as it attempts to measure the perceived impact of the incubation process. The research also used a computer based statistical model to analyse the results,

therefore the output from this research methodology was suitable for this research.

Ideally, a longitudinal study would have been more appropriate for this research, the advantage of a longitudinal study is that it can track changes over time. This research attempted to track changes in the entrepreneurial mindset and entrepreneurial self-efficacy of entrepreneurs over time subsequent to undergoing a business incubation program. However, a cross-sectional study was conducted because of the limited time available to complete the research. Cross-sectional studies are carried out once and represent a snapshot of one point in time.

The research was also limited to measuring impact, it did not build on or test theory. The researcher's involvement in the data collection was limited to distributing the questionnaire, which limited researcher bias (Cooper & Schindler, 2011).

3.3 Research design

This study made use of 87 responses collected over a period of at least eight months. The study was a cross sectional study of the impact of business incubation as perceived by the incubatees on their entrepreneurial mindset and entrepreneurial self-efficacy. The research made use of electronic surveys sent through e-mail to 487 potential respondents and a further 100 hard copies distributed to several business incubators in the Johannesburg area, for distribution to their respective incubatees and post-incubation entrepreneurs. A response rate of 14 percent was achieved for this study. The instrument used for this study was a combination of the entrepreneurial self-efficacy scale in McGee et al. (2009) and entrepreneurial mind set in Urban (2012).

McGee et al. (2009) achieved a response rate of 38 percent and Urban (2012) a response rate of 65 percent. The low response rate achieved in this study was attributed to two factors, first, the business incubation industry in South Africa is

small and relatively new. Second the incubators indicated that they do not keep track of the incubatees after graduation, which led to outdated contact details.

For the electronic surveys, databases containing contact details of their incubatees and post incubation entrepreneurs from three established business incubators were utilised and for the hard copies, companies were identified through a web search of incubators. Electronic (telephonic and email) contact was established with these companies and a formal request for participation was then forwarded. This was followed up by a personal visit. In total, 15 companies were requested to participate and only five companies agreed and participated in the study.

Electronic reminders were sent on a weekly basis to potential respondents for the electronic surveys. These were followed up telephonically. Monthly email reminders were sent to the companies who agreed to participate and telephonic reminders were given to the hard recipients.

The data was combined and analysed using a computer based statistics package (SPSS version 21). The analysis entailed data verification and cleaning, which is a process of ensuring that the data is clean, correctly captured and useful. The data for the research consisted of nominal and ordinal variables therefore, frequencies were calculated on each variable to detect errors and/or anomalies in the data.

The questionnaire was validated by testing for reliability of each sub-construct. After the questionnaire was validated, composite scores for each of the sub-constructs were calculated. The mean score of each sub-construct was calculated by taking the individual items that constitute the construct.

Descriptive statistics were calculated based on the mean scores and utilised to address propositions 1 and 3. Statistical analysis was conducted and utilised to address propositions 2 and 4. The results were then assessed against theory.

3.4 Population and sample

3.4.1 Population

The target population was entrepreneurs who were operating a venture and had been through an incubation program. It was not possible to estimate the population size; incubators do not keep contact with incubatees after graduation, there is no central record keeping for both incubatees and incubators, and the industry does not have a clear definition of what constitutes an incubator. Since the study is cross-sectional, it considered entrepreneurs who have completed an incubation program. Due to the limited number of responses received, the target population was modified to include entrepreneurs on their final stages of an incubation program. This was further motivated by concerns raised by business incubators pertaining to the difficulty of tracing incubatees after completing incubation.

3.4.2 Sample and sampling method

There are two methods available which the researcher can use to choose a suitable sampling method namely, a probability or non-probability sample. A probability sample is considered idea because in a probability sample, probability-based confidence estimates of the various parameters that cannot be made with non-probability samples are possible (Cooper and Schindler, 2011).

Non-probability sampling is arbitrary and subjective, it does not allow for each member of the population to have a known chance of being included. On the other hand probability sampling is based on the concept of random selection with a controlled procedure that assures that each population element is given a known nonzero chance of selection. Only probability samples provide estimates of precision (Cooper & Schindler 2011).

A probability sample would have been ideal for this research. However, the incubation industry is fragmented, there is no formal record keeping of the companies involved in the industry, companies that provide any form of business

support regard themselves as incubators, and there is unwillingness from both the public and private sectors to share information. The research therefore used a non-probability purposive sample. Various institutions were approached to supply information with no success.

Only two incubators out of 12 that were approached agreed to make their databases available for this research, subject to strict confidentiality. The databases were found to have mostly outdated contact details and incorrect information. The two databases were merged after 'cleaning' to constitute a potential convenient sample of 487 participants.

Given that most of the information was either incorrectly captured or outdated, the 487 participants refer to the number of emails that were delivered by the system. The survey was distributed via email. Weekly reminders were sent to those participants that had not responded. The research aimed for a minimum of 120 respondents.

3.5 The research instrument

The instrument of measurement adopted for this research is an electronic questionnaire (APPENDIX A contains a copy of the questionnaire). Items that were included in the questionnaire have been formulated based on previous studies documented in the literature and particularly build upon the approaches and questionnaires followed in the studies conducted by McGee et al. (2009) for entrepreneurial self-efficacy and by Urban (2012) for entrepreneurial mindset. The instrument was distributed either electronically or was handed out as a paper-based questionnaire to potential. For the electronic survey, the research instrument was distributed using the following methods:

- Directly by the researcher*:* An introductory email with a link to the online survey was sent to the subjects.

- By a third party in the employ of the incubators that agreed to participate in the study: The researcher provided a letter from the supervisor

confirming the research was for academic reasons and a brief write-up of the aims and objectives of the study. The third parties then distributed an email with a link to the online survey to their entrepreneurs whose names were not on the databases provided.

For the paper-based questionnaire, a third party in the employ of the incubators handed out questionnaires to their entrepreneurs who did not have access to email.

The instrument was divided into two main sections. One section contained items related to the constructs of entrepreneurial self-efficacy and entrepreneurial mindset. The other section dealt with demographic information and items related to the business incubation. Additionally, the wording of items for the constructs of entrepreneurial self-efficacy and entrepreneurial mindset were simplified slightly in an attempt to reduce interpretation difficulties.

The survey items were grouped and presented as follows:

- Five-point Likert scaled items for the constructs of entrepreneurial self-efficacy and entrepreneurial mindset; and
- Nominal items for demography and business incubation.

3.5.1 Entrepreneurial mindset scale

The entrepreneurial mindset dimensions and items were based on a 36 item, five-factor instrument detailed in Urban (2012). Urban (2012) adopted a scale by Haynie and Shepherd (2009) for measuring adaptive cognition. This instrument was chosen because, it has been validated in previous studies, it is relevant to the topic being researched, it is peer-reviewed and cited in previous studies. Items 20 to 55 on the instrument relate to the entrepreneurial mindset on the scale. Table 7 indicates the sub-constructs that make up the entrepreneurial mindset scale, the relevant studies that informed the development of the scale and the Cronbach's alpha obtained in the study by McGee et al. (2009).

Table 7: Entrepreneurial mindset sub-constructs

(Urban, 2012)

Sub-construct	Reference studies	Cronbach's alpha
Goal orientation	Haynie and Shepherd, 2009; McMullen and Shepherd, 2006; Mitchel, et al., 2007; Krueger et al., 2000	.86
Metacognitive Knowledge	Haynie et al., 2010; Flavell, 1987; Haynie and Shepherd, 2009; McMullen and Shepherd, 2006; Krueger et al., 2000; Dutta and Thornhill, 2007	.77
Metacognitive experience	Haynie et al., 2010; Haynie and Shepherd, 2009; Dutta and Thornhill, 2007; Busenitz and Lau, 1996	.75
Metacognitive choice	Baron, 1998; Thompson, 2009; Krueger and Brazael, 1994; Karhunen and Ledyaeva, 2010; Kim and Hunter, 1993; Krueger et al., 2000;	.78
Monitoring	Flavell, 1987; Flavell, 1979; Kolvereid and Isaksen, 2006; Krueger, 2007; Hyanie and Shepherd, 2009; Haynie et al., 2010	.84

To ensure that the instrument was aligned with this study, the wording of the items was slightly modified and the six-point Likert scale format was changed to a five-point Likert scale format. The Cronbach alphas derived in the reliability analysis of the scales used in this study were between 0.75 and 0.86 indicating a good level for the reliability of each construct.

3.5.2 Entrepreneurial self-efficacy scale

The entrepreneurial self-efficacy dimensions and items were based on a 19 item, five-factor instrument of McGee et al. (2009). This instrument was chosen because, it has been validated in previous studies, it is relevant to the topic being researched, it is peer-reviewed and cited in previous studies. Items one to 19 on the instrument relate to the entrepreneurial self-efficacy on the scale. Table 8 indicates the sub-constructs that make up the entrepreneurial self-efficacy scale, the relevant studies that informed the development of the scale and the Cronbach alphas obtained in the study by McGee et al. (2009).

Table 8: Entrepreneurial self-efficacy sub-constructs

(McGee et al., 2009)

Sub-construct	Reference studies	Cronbach's alpha
Searching	Hisrich and Peters (1998); Steven, Roberts, and Grousbeck (1985)	.84
Planning	Mueller and Goic (2003); Steven et al. (1985)	.84
Marshalling	Mueller and Goic (2003); Steven et al. (1985)	.80
Implementing people	Mueller and Goic (2003); Steven et al. (1985)	.91
Implement financial	Mueller and Goic (2003); Steven et al. (1985)	.84

To ensure that the instrument was aligned with this study, the wording of the items were slightly modified and the five-point Likert scale format was maintained. The Cronbach alphas derived in the reliability analysis of the scales used in this study were all above 0.80 indicating a good level for the reliability of each construct.

3.5.3 Reliability

The Cronbach's alpha of the sub-constructs pertaining to entrepreneurial mindset and entrepreneurial self-efficacy are presented in Table 9 and Table 10 respectively. A Cronbach alpha of 0.8 is appropriate for cognitive testing, for ability testing a cut off-point of 0.7 is more suitable (Kline, 1999, cited in Fields, 2013). All subscales calculated Cronbach alphas in excess of 0.9 indicating a strong level of internal consistency.

Table 9: Cronbach alphas of the sub-constructs pertaining to entrepreneurial mindset

Sub-construct	Items	Items left out	Cronbach alphas
Goal orientation	20 to 24	None	0.96
Metacognitive knowledge	25 to 35	None	0.97
Metacognitive experience	36 to 43	None	0.96
Metacognitive choice	44 to 48	None	0.95
Monitoring	49 to 55	None	0.97

Table 10: Cronbach alphas of the sub-constructs pertaining to entrepreneurial self-efficacy

Sub-construct	Items	Items left out	Cronbach alphas
Searching	1,2,3	None	0.92
Planning	4,5,6,7	None	0.92
Marshalling	8,9,10	None	0.91
Implementing-people	11 to 16	None	0.95
Implementing-financial	17,18,19	None	0.94

3.5.4 Validity

This section focuses on internal validity, particularly the ability of the instrument to measure what it is intended to measure. This kind of validity can be classified into three major forms; content validity, criterion-related validity and construct validity (Cooper & Schindler, 2011, Fields, 2013).

Content validity

The content validity of an instrument concerns the ability of the instrument to include all the issues of interest identified in the study. The instrument needs to include a representative sample all the issues pertaining to the study in relation to the social world to be considered to have good content validity. To ensure that content validity of an instrument, the researcher must establish all the elements that make up the content of the study, and the instrument must then be structured in such a way that all the identified elements are included (Cooper & Shindler, 2011; Field, 2013).

Criterion-related validity

Criterion-related validity is concerned with the instrument items that are intended for predicting or estimation (Cooper & Shindler, 2011). The criterion validity can be assured by removing biases and also by ensuring reliability (Cooper & Shindler, 2011).

Construct validity

There are two major forms of construct validity, namely convergent validity and discriminant validity (Cooper & Shindler, 2011; Field, 2013). Convergent validity refers to the degree to which scores on one scale correlate with scores on other scales designed to assess the same construct (Cooper & Shindler, 2011; Field, 2013; Gravetter & Forzano, 2012). Discriminant validity refers to the degree to which scores on a scale do not correlate with scores from scales designed to measure different constructs (Cooper & Shindler 2011; Field, 2013; Gravetter & Forzano, 2012).

This study focused on discriminant validity and used factor analysis for evaluation. The research relied on previously validated instruments. Entrepreneurial self-efficacy instrument of McGee et al. (2009) and entrepreneurial mindset instrument by Urban (2012).

Entrepreneurial mindset scale

Exploratory factor analysis (EFA) was used to identify the *de facto* underlying orthogonal dimensions of measure of cognitive adaptability (MCA) namely goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice and monitoring. The study concluded that the EFA offered evidence of discriminant validity.

Entrepreneurial self-efficacy

EFA was used to identify the underlying dimensions of entrepreneurial self-efficacy namely searching, planning, marshalling, implementing-people, and implementing-financial. The study concluded that the EFA offered evidence of discriminant validity.

3.6 Procedure for data collection

The research instrument used for this study was a self-administered questionnaire. The instrument was distributed electronically using Qualitrics, a web based survey tool, to 487 participants and another 100 hard copies were given to the participating organisations to hand out to their entrepreneurs who do not have access to email. A covering letter explaining the nature, purpose and objectives of the survey accompanied the instrument (APPENDIX A contains a copy of the instrument).

A response rate of 14 percent was achieved for this study. The instrument used for this study was a combination of the entrepreneurial self-efficacy scale by McGee et al. (2009) and entrepreneurial mindset scale by Urban (2012). McGee et al. (2009) achieved a response rate of 38 percent and Urban (2012) achieved a response rate of 65 percent. The low response rate achieved in this study

could be attributed to two factors; first, the business incubation industry in South Africa is small and relatively new. Second, the incubators indicated that they do not keep track of the incubatees after graduation, which led to outdated contact details.

3.7 Data analysis and interpretation

3.7.1 Descriptive statistics

Descriptive statistics were generated on the original data for data cleaning and verification. The descriptive statistics considered were frequency distributions (Histograms); graphs indicating the number of times each score occurs. In an ideal world, data would be distributed symmetrically around the centre of all scores forming a bell shaped curve, a phenomenon known as a normal distribution (Fields, 2013).

Fields (2013) identified lack of symmetry (skewness) and pointiness (kurtosis) as the main deviations from a normal distribution. Skewed distributions are not symmetrical with most of the frequency scores clustered at one end of the scale. A skewed distribution can either be positively skewed or negatively skewed.

Kurtosis refers to the degree to which scores cluster at the ends of the distribution thereby determining the degree of the distribution's pointiness (Fields, 2013). A distribution with positive kurtosis has many scores in the tails and is pointy while a distribution with negative kurtosis is relatively thin in the tails and tends to be flatter than normal (Fields, 2013).

3.7.2 Reliability

Cronbach's alpha was calculated on each subscale to examine internal consistency reliability. This was done in order to measure the degree to which instrument items are homogeneous and reflect the same underlying constructs (Cooper & Shindler, 2008). A Cronbach alpha of 0.8 is appropriate for a cognitive

test, for an ability test a cut off-point of 0.7 is more suitable (Kline, 1999, cited in Fields, 2013).

3.7.3 New variables

Composite scores were generated by computing the mean score of the individual items that constitute the various sub-constructs to form new variables. Entrepreneurial self-efficacy construct had five sub-constructs (searching, planning, marshalling, implementing-people, and implementing-financial), and the entrepreneurial mindset construct had five sub-constructs (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and monitoring). The new variables were named after their respective sub-constructs. The new variables were used to recalculate the descriptive statistics. The descriptive statistics considered were the mean and standard deviation. These outputs of the descriptive statistics addressed Propositions 1 and 3.

3.7.4 Independent t-test

The independent t-test is used to test differences between the means of two groups (Fields, 2013). The suitability of the test is dependent on the size of the sample and the variation in the data. According to Fields (2013), the test depends on the following assumptions:

- The variances of the two groups must be homogeneous. The standard deviations calculated from the groups must not differ significantly.
- The data must be normally distributed as the test is a parametric test. The variable under consideration must be continuous.

The independent t-test was used to compare the perceptions of the incubatees who were still in the incubation program with those that had completed the incubation program, among the two main constructs entrepreneurial mindset and entrepreneurial self-efficacy and their respective sub-constructs (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and

monitoring) and (searching, planning, marshalling, implementing-people, and implementing financial).

3.7.5 Homogeneity

The Levene's test tests the null hypothesis; that the variance in different groups are equal (Levene, 1960, cited in Fields 2013). The test works by doing a one-way ANOVA on the deviation scores, the absolute difference between each score and the mean of the group from which it came (Glass, 1966).

According to Fields (2013) the Levene's test is significant at $p < 0.05$, then the null hypothesis is incorrect and the variances are significantly different meaning that the assumption of homogeneity of variances has been violated. The test is non-significant at $p > 0.05$, then the variances are approximately equal and the assumption is tenable. The test was used in the interpretation of the output of the t-test to decide whether to use the 'equal variances assumed' or the 'equal variances not assumed' output.

3.7.6 Normality

The Kolmogorov-Smirnov test and Shapiro-Wilk test compare the scores in the sample to a normally distributed set of scores with the same mean and standard deviation (Fields, 2013). If the test is non-significant ($p > 0.05$) then the distribution of the sample is not significantly different from a normal distribution. On the other hand, if the test is significant ($p < 0.05$) then the distribution is significantly different from a normal distribution.

The tests were used to decide whether parametric or non-parametric t-tests were appropriate. Fields (2013) cautioned that other methods of testing normality must always be done in-order to make informed decisions about the extent of non-normality based on converging evidence.

Frequency distributions (Histograms) and probability-probability plots (P-P plots) were generated and utilised to check for normality of the data based on the 'new variables'.

The P-P plots plot the cumulative probability of a variable against the cumulative probability of a normal distribution (Fields, 2013). If the values fall on the diagonal of the plot then the variable is normally distributed. However, when the data sag consistently above or below the diagonal, it indicates that the kurtosis differs from a normal distribution, and when the data points are S-shaped, the problem is skewness (Fields, 2013).

3.7.7 Non-parametric tests

Non parametric tests were utilised in this study when the assumption of normality was violated. The violation of normality was as a result of the small sample size collected during the data collection phase.

Non-parametric tests make fewer assumptions than parametric tests, hence they overcome the problem associated with the distribution of scores by ranking the data (Fields, 2013). The ranking of the data results in the high scores being represented by large ranks, and in the low scores being represented by small ranks (Fields, 2013). The analysis of the data is then carried out on the ranks rather than the actual data (Fields, 2013). The ranking of the scores eliminates the outliers and addresses problems with skewness (Fields, 2013). The Mann-Whitney test was conducted for this study.

The Mann-Whitney test calculates the p-value for non-parametric tests in two ways. The first method referred to as the asymptotic method gives an approximation that is suitable for larger samples (Fields, 2013). The second method referred to as the exact method gives an exact significance in small samples (less than 50) or when the data are poorly distributed (Fields, 2013). A sample size of 87 was achieved for this study; therefore, the asymptotic method was adopted for interpreting the test output.

3.7.8 Effect size

The effect size was calculated for the generation of a standardised measure of the observed effect and can be compared to other similar studies. An effect size is an objective and standardised measure of the magnitude of the observed effect (Fields, 2013).

Equation 1 was used to calculate the effect size for the independent t-test. The equation converts a t-value into an effect size r (Rosenthal, 1991).

$$r = \sqrt{[(t^2)/(t^2+df)]}$$

Equation 1: Effect size for independent t-test

(Rosenthal, 1991, p. 19)

Equation 2 was used to calculate the effect size for the Mann-Whitney test. The equation converts a z-score into the effect size estimate r (Rosenthal, 1991).

$$r = z/\sqrt{N}$$

Equation 2: Effect size for Mann-Whitney test

(Rosenthal, 1991, p. 19)

The effect size was included in the interpretation and reporting the results of the Mann-Whitney test based on the following recommendations by Fields (2013).

- r = 0.10 (small effect). The effect explains one percent of the total variance.
- r = 0.30 (medium effect). The effect accounts for nine percent of the total variance.
- r = 0.50 (large effect). The effect accounts for 25 percent of the variance.

3.7.9 Significance tests and assumptions

The tests for homogeneity of variance (Levene's test), normality (Komogorov-Smirnoff and Shapiro-Wilk tests), and significance of skew and kurtosis have fundamental problems associated with their use (Fields, 2013). They are all based on null hypothesis significance testing meaning that in large samples they can be significant even for small and unimportant effects (Fields, 2013). In small samples, they generally lack the power to detect violations of assumptions (Fields, 2013).

According to Fields (2013), the central limit theorem means that as sample sizes get bigger, the assumption of normality matters less because the sampling distribution will be normally distributed regardless of what the population data looks like. In large samples, normality should not be a concern because a test for normality is likely to be significant leading to unnecessary testing. In small samples, normality should be a concern because a significant test will not have the power to detect non-normality.

3.8 Limitations of the study

This section briefly outlines the limitations of the study.

3.8.1 Time constraint limitation

A cross-sectional study, which represents "a snapshot at a point in time" (Cooper & Schindler, 2011, p. 149), was undertaken instead of a longitudinal study. This was done to limit the time required for the study to match the time allocated for concluding the program. The study sought to measure the impact of business incubation on the incubatees, which ideally requires a longitudinal study (Cooper & Schindler, 2011, p. 149).

3.8.2 Sampling constraint limitation

The researcher experienced difficulties in gaining access to the target population of this study. This was as a result of the following:

- Incubators were mostly unwilling to share information about their business'
- Incubators were also reluctant to share information about their incubatees'
- There is no clear definition of an incubator. Any form of business support is considered incubation;
- Incubators are not keeping up-to-date records of their incubatees post incubation;
- The lack of organisation and record keeping in the business incubation industry made it impossible to estimate the size of the population; and
- The sample was selected on a purposive basis. It is therefore likely the the sample is not representative of the population.

The target group was entrepreneurs who have been through an incubation program. As this is potentially a small group, this can present further limitation. The results showed that a greater number and variety of individuals should be surveyed.

3.8.3 Pilot limitation

A pilot study was conducted to test the adequacy of the instrument (Cooper & Schindler, 2011). However, due to challenges in accessing the target population, the pilot study was conducted using Wits Business School students who are busy with a Masters in Management in the field of Entrepreneurship and New Venture Creation (MMENVC), instead of a random sample of incubatees. Feedback from the pilot study indicated that there was some ambiguity on the wording of some of the scale items, which were subsequently modified.

3.8.4 Data collection limitation

The instrument was a self-administered questionnaire. It is then possible that the participant injected a degree of personal biases of the incubation process.

3.9 Validity and reliability of research

This section briefly describes the validity and reliability aspects of the study.

3.9.1 External validity

The external validity of the study relates to the suitability of the findings of a study to be applicable to contexts that are different from the context in which the study was conducted (Gravetter & Forzano, 2012; Hulley, Cummings, Browner, Grady, & Newman, 2013). Any aspects of the study the render the findings to be exclusively applicable to a particular context are considered a threat to external validity (Gravetter & Forzano, 2012).

The ability to generalise these research findings across the population is limited due to the small sample size, the purposive sampling methodology used and the difference in the contexts for enterprise development in other parts of the world compared to South Africa.

3.9.2 Internal validity

The concept of internal validity of a study requires that the study is done in such a way that allows the researcher to be able to reach the right conclusions from the research taking into account the variable of the study that are being measured (Hulley et al., 2013), it is a concept that is aimed at reducing the degree of non-random error and bias (Fink, 2003, p, 60). Internal validity examines the extent to which the results of the survey measure what was intended to be measured (Cooper & Schindler, 2011).

Minor deviations from the original scales were allowed as follows:

- In the entrepreneurial self-efficacy scale, to ensure that the instrument was aligned with this study, the wording of the items was slightly modified.
- In the entrepreneurial mindset scale, to ensure that the instrument was aligned with this study, the wording of the items was slightly modified and the six-point Likert scale format was changed to a five-point Likert scale format.

3.9.3 Construct validity

Construct validity is concerned with ensuring that the items in a measurement instrument that make up a construct correctly measure what the construct is intended to measure. Factor analysis is used to measure construct validity (Cooper & Shindler, 2011). In an attempt to ensure construct validity, the study utilised scales that were previously validated.

3.9.4 Reliability

Data collection for the study was done in the form of a self-administered survey. Self-administered surveys present a challenge to the reliability of a study because the accuracy of the measurement is dependent on the personal feelings and abilities of the participants to accurately interpretation instrument (Cooper & Shindler, 2011). Furthermore, a reliable study means that the same conclusions drawn by the researcher shall be achieved when the instrument in applied in a different contexts but under similar conditions (Vogt & Johnson, 2011).

A mini pilot study was done to identify weakness in the design of the instrument (Cooper & Schindler, 2009). The pilot study was done using Wits Business School MMENVC students because of time pressures and inaccessibility of the incubators. Feedback from the pilot study indicated the following:

- The wording of some of the items was confusing. The response was to simplify the wording of the item.

- The original entrepreneurial self-efficacy scale was a five-point Likert-type scale, and the original entrepreneurial mindset scale was a six-point Likert-type scale. The respondents indicated that this was confusing. The response was to convert the entrepreneurial mindset scale to a 5-point Likert-type scale similar to the entrepreneurial self-efficacy scale.

3.10 Common method bias

The research acknowledges the potential impact of common method bias on the findings of this study. Method biases have a negative impact on the outcome of research because they introduce errors in the measurement (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). The measurement errors associated with common method bias can be classified as random errors and systematic errors. These errors can invalidate the validity of the conclusions drawn from a study (Bagozzi, Yi & Phillips, 1991; Nunnally, 1978).

Systematic errors are considered to have primacy over the random errors because they can lead to completely different findings about the relationship between measures (Podsakoff et al., 2003). The concept of method variance is considered to be the main course of the systematic errors (Bagozzi et al., 1991). There are differences in how scholars define the term method and what constitutes a bias (Podsakoff, MacKenzie & Podsakoff, 2012). The following sections discuss the fundamental differences put forward by researcher in defining the concept of a method and also how bias is introduced in a study.

3.10.2 Method

Method in the context of this study is concerned with the external issues that have an impact on the study. These external issues can impact different aspects of the study ranging from the wording of the scale, type of scale chosen, the prescribed response format and the social context in which the study is being undertaken (Fiske, 1982). These external issues manifest in several ways in the actual study, however the most common manifestation is in the response biases

such as halo effects, social desirability, acquiescence, leniency effects, or yea- and nay- saying (Fiske, 1982).

There are other researchers who are of the view that method should be more narrowly defined (Lance, Baranik, Lau, & Scharlau, 2009; Sechrest, Davis, Stickle, & McKnight, 2000). Method should include only the aspects of measurement that provide different approaches to scale formats to represent standing on latent constructs (Lance et al., 2009).

Podsakoff et al. (2012) recommended the use of the broader definition of method, he argued that the response styles of the raters, the characteristics of the items of the scale and the context in which the measurement is conducted which are exclude in the narrow definition of method to contribute to systematic measurement error. Therefore, this study adopted the broader definition of method.

3.10.2 Method bias

Method bias has a negative impact on the reliability and validity of the constructs, it can also lead to an incorrect relationship between two constructs (Cote & Burkley 1987; 1988; Doty & Glick, 1998; Podsakoff et al., 2003; Williams, Hartman & Cavazotte, 2010).

3.10.3 Sources of method bias

As mentioned above, common method biases can have a negative impact on the findings of a research. This section discusses the most likely causes of method bias and relates these to the current study.

Social desirability

Social desirability “refers to the need for social approval and acceptance and the belief that it can be attained by means of culturally acceptable and appropriate behaviour” (Marlowe, 1964, p. 109). Individuals in general are inclined to project themselves favourably when requested to provide insight about themselves even

if this does not reflect their honest opinion about a topic (Podsakoff et al., 2003). Such behaviour could bias the responses and lead to distorted relationships between variables. Social desirability may not have been completely eliminated, it posed a risk to the study.

Acquiescence (yea- or nay-saying)

Acquiescence response set refers to the "tendency to agree with attitude statements regardless of content" (Winkler, Kanouse, & Ware, 1982, p. 555). Acquiescence could cause a correlation between scale items that are that have similar wording but have a different meaning in context (Winkler, Kanouse, & Ware, 1982). There were some minor alterations to some of the wording of the items to remove similarities in the item wording however acquiescence remained a potential risk to the study.

Item complexity and/or ambiguity

The complexity of the constructs that researchers use could sometimes lead to complex and abstract scale items (Peterson, 2000; Spector, 1992). Other sources of complex scale items are double-barrelled questions (Hinkin, 1995), words with multiple meanings (Peterson, 2000), technical jargon or colloquialisms (Spector, 1992), or unfamiliar or infrequently used words (Peterson, 2000). Complex scale items lead respondents to formulate their own meaning of the items or resort to guessing the actual meaning. The wording on the items was slightly modified to eliminate ambiguity however care was taken not to alter the context of the items.

Scale format and scale anchors

There are differences of opinion regarding the use of uniform scales to measure different constructs. There is a view that a uniform scales makes it easier for the respondents to respond to the questionnaire as the respondent is not required to navigate between different types of scales. The is also a view that uniform scales lead to covariation among constructs that are not caused by the consistency of the scale properties but by the content of the items (Podsakoff et al., 2003).

For the mindset scale, items were not randomised when administering the instrument as recommended. However, they were not categorised according to the theoretical dimensions they were measuring. The instrument was converted from a six-point scale, starting on the left with the statement '1=not very much like me' ending on the right with the statement '6=very much like me' to a five-point Likert-type scale, starting on the left with the statement '1=no affect' ending on the right with the statement '5=major affect'. The items of the self-efficacy scale were also not categorised according to the theoretical dimensions they are measuring. The scale was adopted as a five-point Likert scale but the measurement was changed from starting on the left '1=very little', ending on the right '5=very much' to starting on the left with the statement '1=no affect' ending on the right with the statement '5=major affect'. This consistency may have had a negative impact of the covariation of the constructs.

Negatively worded (reverse-coded) items

The introduction of negatively worded items in a measurement scale has the potential to minimise biases associated with clear patterns (Hinkin, 1995; Peterson, 2000). Reverse-coded items have the potential to create artifactual response factors that are directed purely at the negatively worded items, these factor then disappear when the reverse-coded items are rewritten in a positive manner (Peterson, 2000). The effects of negatively worded items occur as a result respondents establishing a pattern of responding to a questionnaire, this could result in the respondents failing to respond appropriately to the positive or negative wording of the items. Thus, negatively worded items may be a source of method bias (Peterson, 2000). No items were negatively worded on the scale for this research.

Scale length

Scales that are considerably short by design allow the respondents to memorise their responses from one scale and then use these responses to inform their responses to the next scale (Harrison, McLaughlin, & Coalter, 1996). Shorter scales have an advantage in that they allow the respondents to finish the

surveys before they get tired, tired respondents tend to give answers without giving proper consideration (Hinkin, 1995). However, short scales are not recommended as they have the potential to introduce bias to a study by allowing respondent to recall responses from previous scales (Hinkin, 1995). The scale for this study had 55 items.

Intermixing items of different constructs on the questionnaire

The benefits of mixing items of different construct on a measurement instrument have not been ascertained (Podsakoff et al., 2012). Since, the benefits of mixing scale items are unclear, the items on the scale for this research were not mixed. The items for the entrepreneurial self-efficacy scale formed the top section of the questionnaire (1 to 19) and the entrepreneurial mindset scale formed the bottom part (20 to 55).

The research sought to keep changes to the existing scales to a minimum. Minor adjustments were made to the wording of some items on both scales to suit context. This was done intentionally to avoid compromising the validity of the scales. Changing scale anchors and format can change the meaning of a construct. This was done in view of following statement; “We would caution researchers to be careful not to sacrifice scale validity for the sake of reducing common method biases when altering the scale formats, anchors, and scale values” (Podsakoff et al., 2012, p. 889).

3.11 Conclusion

The philosophical assumptions adopted in this study are referred to as epistemology. The study was quantitative, therefore a positivistic paradigm was assumed. The study was cross-sectional, and made use of a survey for data gathering. There were 87 responses translating into a 14 percent response rate. The target population was entrepreneurs who were currently operating a venture and had been through an incubation program. The sampling methodology was a purposive, non-probability sample.

The study made use of scales from previous studies. It benefited the entrepreneurial mindset scale from Urban (2010) and the entrepreneurial self-efficacy scale from McGee et al. (2009). The discriminant validity of the instrument was demonstrated in previous studies. Various tests were conducted in-order to analyse and interpret the data from the field. The tests ranged from the independent t-tests to non-parametric tests. The study was subjected to certain limitations; there were time constraints, sampling constraints, piloting constraints, and data collection constraints.

The requirements for validity and reliability for both the instrument and the research at large was considered. The research was subjected to certain biases such as social desirability, acquiescence, item complexity and/or ambiguity, scale format and scale anchors, scale length, intermixing items of different constructs on the questionnaire.

CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the findings and results of the research. The data was analysed and the results reported in accordance with the research methodology chapter of this report.

This chapter begins by providing a description of the demographics. This is followed a discussion of the process followed in the clean-up of the data in preparation for analysis.

An analysis of the internal consistency and reliability conducted on the data with relevant tables displaying the resultant analysis follows. Results pertaining to each proposition are described and an overall summary of the results presented.

4.2 Demographic profile of respondents

The demographic characteristics of the sample were analysed and the descriptive statistics are reported in Figure 6 to Figure 9. The majority (62 percent) of the respondents were male with 51 percent of the respondents aged between 25 and 35 as indicated in Figure 6 and Figure 7 respectively. The survey captured respondents of varying age groups ranging from 18 years to above 55 years of age.

All the respondents had a matric certificate with 35 percent having obtained post-graduate degrees as indicated in Figure 8. The majority of respondents were black (85 percent) as indicated in Figure 9. This profile bore similarities to the profile of the study by Urban (2012) for the entrepreneurial mindset scale, there were no similarities with the profile of the study by McGee et al. (2009) for the entrepreneurial self-efficacy scale. The study by Urban (2012) was conducted in a similar context as the current study.

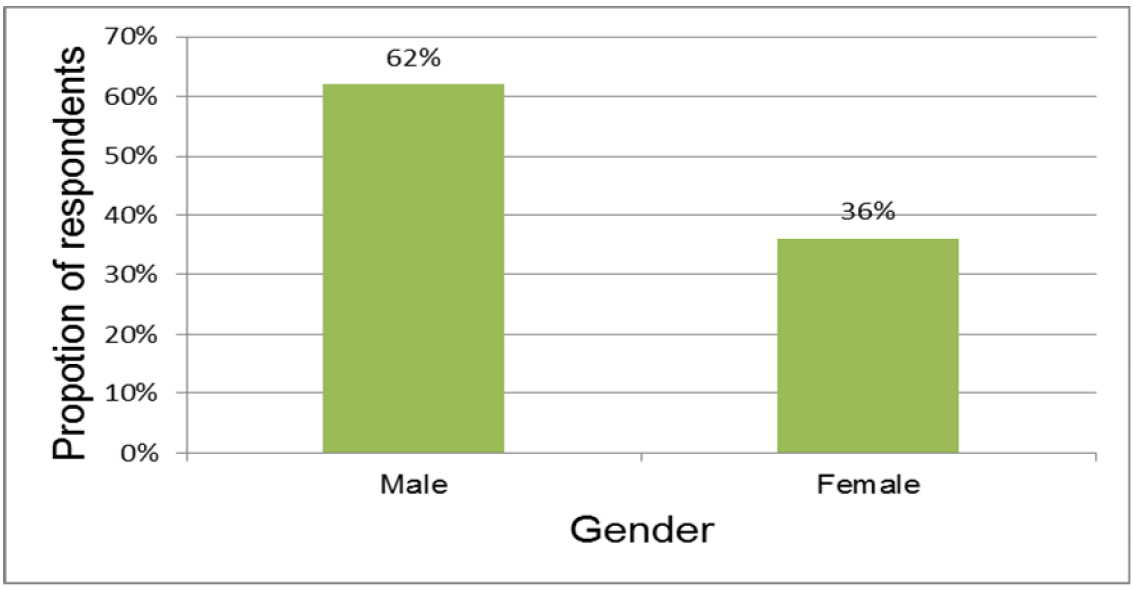

Figure 6: Gender of respondents

Figure 6 depicts the gender of the respondents. There were almost double the number of males in incubation (62 percent) compare with females in incubation (36 percent).

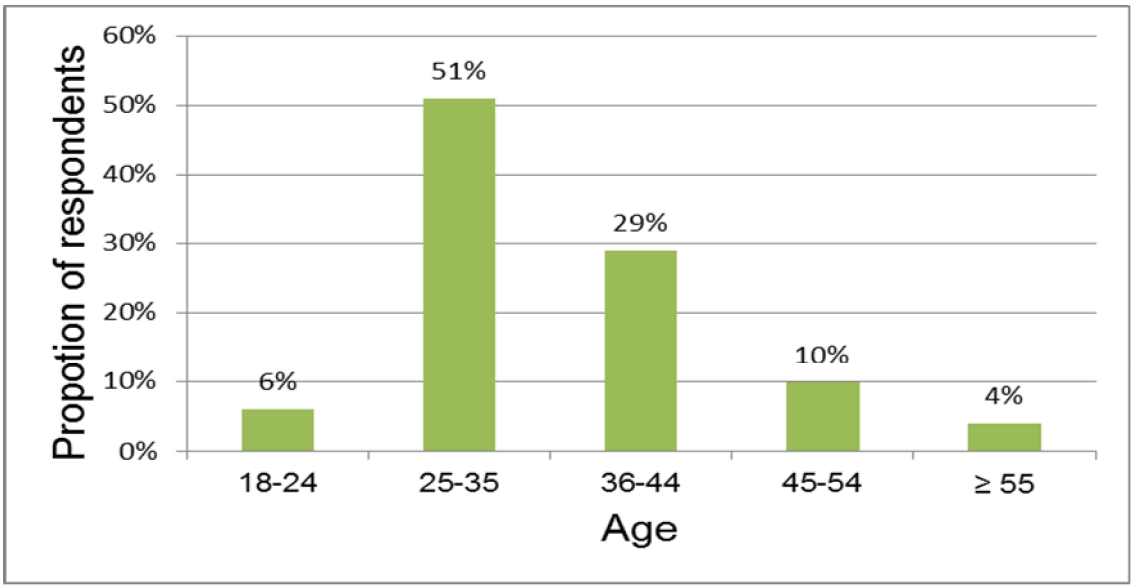

Figure 7: Age of respondents

Figure 7 depicts the age distribution of the respondents. The figure indicates that incubation is open to all age groups. Predominantly young people between the ages of 25 to 35 years make up the majority of incubatees. This trend is in line with the unemployment trend. Youth (36.1 percent) unemployment is significantly higher than adult (15.6 percent) unemployment. This has led young people to resort to entrepreneurship.

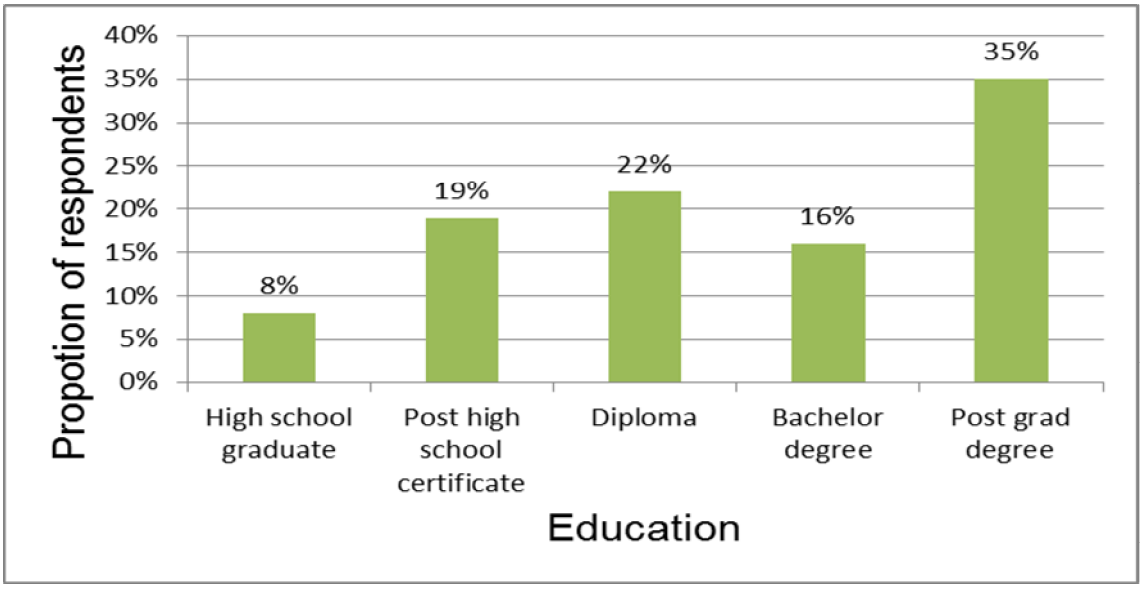

Figure 8: Education level of respondents

Figure 8 depicts the education level of the incubatees. The figure indicates that more than 90 percent of the incubatees have a post matric qualification and that 35 percent of the incubatees have a post graduate qualification.

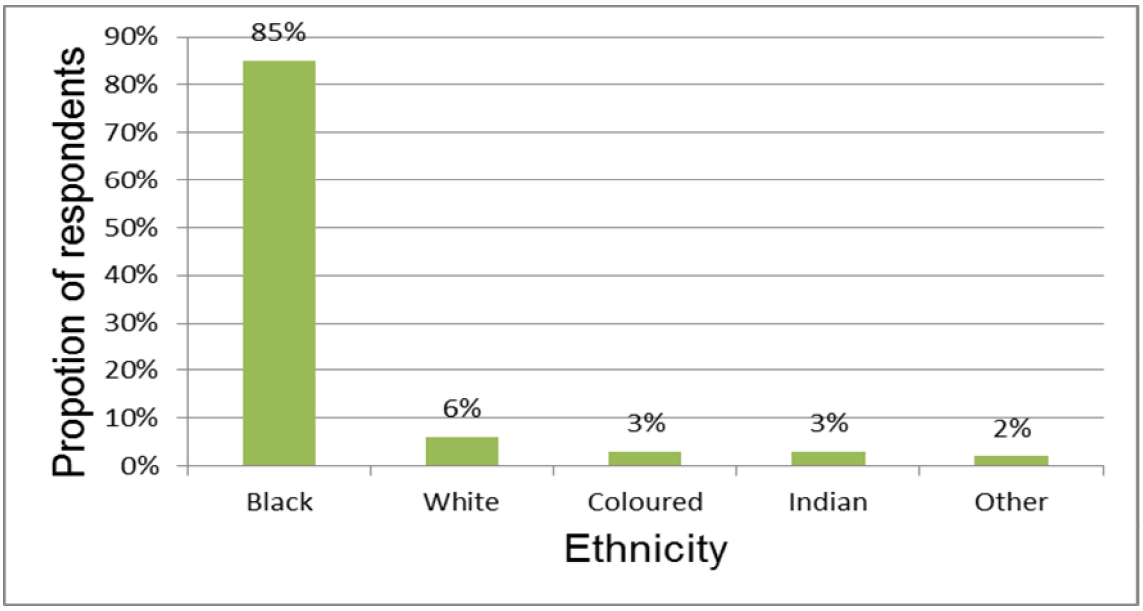

Figure 9: Ethnicity of respondents

Figure 9 depicts the ethnicity of the incubatees. The figure indicates that 85 percent of the incubatees are black. There was double the number of whites compared with other ethnicities. This finding may not necessarily be reflective of the population, it is possible that ethnicity is skewed along incubation archetypes. Only two incubators participated in this study.

4.3 Data cleaning and verification

Frequency distributions for all the questions (scale items) included in the questionnaire were calculated. The outputs were compared with the original questionnaire. This was done to ensure that the results of the survey conformed to the specifications of the questionnaire. There were no errors and omissions found in the data. The results are indicated in detail in APPENDIX B.

4.4 Internal consistency and reliability of scales

The Cronbach alphas of the constructs pertaining to entrepreneurial mindset and entrepreneurial self-efficacy are presented in Table 9 and 10 respectively. A

Cronbach alpha of 0.8 is appropriate for cognitive tests, for ability tests a cut off-point of 0.7 is more suitable (Kline, 1999, cited in Fields, 2013). All subscales have calculated Cronbach alphas in excess of 0.9 indicating a strong level of internal consistency.

4.5 Results pertaining to Proposition 1

This section deals with results pertaining to Proposition 1, which stated that incubatees perceived a positive impact between incubation and their entrepreneurial mindset. To address this proposition, composite scores for the constructs that pertain to entrepreneurial mindset were calculated subsequent to confirmation of the internal consistency of the scale. Frequency responses for each item were also calculated. The proposition was addressed based on the demographic output of the composite score calculation and the output of the response frequencies.

In Section 0, the various constructs were found to be reliable. Single scores were therefore determined for each construct. Composite scores for the sub-constructs were generated using SPSS version 21 by combining the scores of the individual items that form the sub-construct. For the main constructs of the entrepreneurial mindset the composite scores of the sub-constructs that formed the respective main constructs were used to generate the composite scores.

To generate a composite score for goal orientation, scores for items 20 to 24 were used. To generate a composite score for entrepreneurial mindset composite scores for goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and monitoring were used. The composite scores for the remainder of the sub-constructs were calculated using the same methodology. The items that were used to generate composite scores for each sub-construct are indicated in Table 9. Table 11 depicts the descriptive statistics for the composite scores of the sub-constructs pertaining to entrepreneurial mindset.

Table 11: Descriptive statistics of sub-constructs pertaining to entrepreneurial mindset

Sub-construct	N	Minimum	Maximum	Mean	SD
Goal orientation	87	1.00	5.00	3.71	1.19
Metacognitive knowledge	86	1.00	5.00	3.64	1.14
Metacognitive experience	86	1.00	5.00	3.69	1.12
Metacognitive choice	86	1.00	5.00	3.63	1.16
Monitoring	86	1.00	5.00	3.66	1.17
Entrepreneurial mindset	87	1.00	5.00	3.66	1.10

The mean of the sub-construct goal orientation was 3.71 with a standard deviation of 1.19. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that goal orientation scores were between neutral and moderate effect.

The mean of the sub-construct metacognitive knowledge was 3.64 with a standard deviation of 1.14. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that metacognitive knowledge scores were between neutral and moderate effect.

The mean of the sub-construct metacognitive experience was 3.69 with a standard deviation of 1.12. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that metacognitive experience scores were between neutral and moderate effect.

The mean of the sub-construct metacognitive choice was 3.63 with a standard deviation of 1.16. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that metacognitive choice scores were between neutral and moderate effect.

The mean of the sub-construct monitoring was 3.66 with a standard deviation of 1.17. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that monitoring scores were between neutral and moderate effect.

The mean of the sub-construct entrepreneurial mindset was 3.66 with a standard deviation of 1.10 the scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that entrepreneurial mindset scores were between neutral and moderate effect.

Tables 12, 13, 14, 15 and 16 depict the response frequencies for the items.

Table 12: Frequencies for goal orientation items

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 20	9	10.3%	7	8.0%	13	14.9%	25	28.7%	33	37.9%
Question 21	9	10.3%	3	3.4%	14	16.1%	24	27.6%	37	42.5%
Question 22	10	11.8%	4	4.7%	19	22.4%	22	25.9%	30	35.3%
Question 23	10	11.6%	7	8.1%	13	15.1%	32	37.2%	24	27.9%
Question 24	8	9.4%	8	9.4%	16	18.8%	31	36.5%	22	25.9%

For goal orientation, incubatees had the highest response, which indicated that incubation had a major impact on the ability to understand how accomplishment of a task relates to their own goals (42.5 percent).

Table 13: Frequencies for metacognitive knowledge

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 25	9	10.5%	2	2.3%	16	18.6%	25	29.1%	34	39.5%
Question 26	9	10.5%	9	10.5%	16	18.6%	22	25.6%	30	34.9%
Question 27	8	9.3%	5	5.8%	22	25.6%	27	31.4%	24	27.9%
Question 28	11	12.8%	9	10.5%	16	18.6%	28	32.6%	22	25.6%
Question 29	10	11.6%	5	5.8%	13	15.1%	28	32.6%	30	34.9%
Question 30	10	12.0%	7	8.4%	12	14.5%	30	36.1%	24	28.9%
Question 31	10	11.9%	4	4.8%	12	14.3%	34	40.5%	24	28.6%
Question 32	10	11.6%	7	8.1%	19	22.1%	26	30.2%	24	27.9%
Question 33	9	10.7%	10	11.9%	12	14.3%	34	40.5%	19	22.6%
Question 34	10	11.9%	5	6.0%	17	20.2%	27	32.1%	25	29.8%
Question 35	11	12.9%	5	5.9%	10	11.8%	32	37.6%	27	31.8%

For metacognitive knowledge, the incubatees had the highest responses, which indicated that incubation had a moderate impact on their ability to try to use strategies that have worked in the past (40.5 percent) and also on their ability to try to translate new information into their own words (40.5 percent).

Table 14: Frequencies for metacognitive experience

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 36	9	10.6%	4	4.7%	14	16.5%	26	30.6%	32	37.6%
Question 37	8	9.3%	5	5.8%	13	15.1%	28	32.6%	32	37.2%
Question 38	10	11.8%	1	1.2%	15	17.6%	30	35.3%	29	34.1%
Question 39	10	11.8%	4	4.7%	15	17.6%	27	31.8%	29	34.1%
Question 40	10	11.6%	2	2.3%	13	15.1%	31	36.0%	30	34.9%
Question 41	10	11.8%	2	2.4%	13	15.3%	31	36.5%	29	34.1%
Question 42	9	10.6%	9	10.6%	21	24.7%	20	23.5%	26	30.6%
Question 43	12	14.0%	9	10.5%	19	22.1%	32	37.2%	14	16.3%

For metacognitive experience, the incubatees had the highest response indicating that incubation had a major impact on their ability to think about what really needs to be accomplished before beginning a task (37.6 percent).

Table 15: Frequencies for metacognitive choice

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 44	10	11.8%	3	3.5%	12	14.1%	33	38.8%	27	31.8%
Question 45	11	13.3%	5	6.0%	15	18.1%	33	39.8%	19	22.9%
Question 46	10	11.6%	6	7.0%	18	20.9%	25	29.1%	27	31.4%
Question 47	10	11.9%	5	6.0%	14	16.7%	31	36.9%	24	28.6%
Question 48	10	12.0%	5	6.0%	14	16.9%	33	39.8%	21	25.3%

For metacognitive choice, the incubatees had the highest responses indicating that incubation had a moderate impact on their ability to ask themselves if there was an easier way to do things after finishing a task (39.8 percent) and also ask themselves if they have learned as much as they could have after finishing a task (39.8 percent).

Table 16: Frequencies for monitoring

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 49	8	9.3%	6	7.0%	13	15.1%	30	34.9%	29	33.7%
Question 50	10	11.8%	6	7.1%	13	15.3%	26	30.6%	30	35.3%
Question 51	11	12.9%	4	4.7%	20	23.5%	29	34.1%	21	24.7%
Question 52	10	12.0%	4	4.8%	13	15.7%	33	39.8%	23	27.7%
Question 53	10	11.8%	5	5.9%	17	20.0%	28	32.9%	25	29.4%
Question 54	10	11.9%	7	8.3%	18	21.4%	24	28.6%	25	29.8%
Question 55	9	10.7%	5	6.0%	17	20.2%	21	25.0%	32	38.1%

For monitoring, the incubatees had the highest response indicating that incubation had a major impact on their ability to find themselves analysing the usefulness of a given strategy while engaged in a given task (39.8 percent).

Proposition 1 stated that incubatees perceived a positive impact between incubation and their entrepreneurial mindset. Descriptive statistics, based on composite scores of the sub-constructs for entrepreneurial mindset and the main construct of entrepreneurial mindset are contained in Table 11. The means of all constructs pertaining to entrepreneurial mindset (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and monitoring) are all between three and four. Goal orientation had the highest mean of 3.71 and metacognitive choice had the lowest mean of 3.63. Tables 12, 13, 14, 15 and 16 indicate the frequencies of the scores for items pertaining to entrepreneurial mindset. Question 21, which asked about their understanding of how accomplishment of a task relates to their goals, had a major effect, as depicted in Table 12 with the highest rate of responses at 42 percent.

4.5.1 Conclusions drawn from results pertaining to Proposition 1

In reviewing the results pertaining to entrepreneurial mindset (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and

monitoring), it is apparent that the perceived impact is neither neutral nor moderate. It is between the two measures, however it is greater than 3.5 for all constructs. It is concluded therefore, that incubatees perceived a moderate impact of business incubation on their entrepreneurial mindset with goal orientation being impacted slightly more than the other constructs. Incubatees perceived a major impact on their ability to understand how accomplishment of a task relates to their goals. They perceived a minor impact on their ability to organise their time to best accomplish their goals.

4.6 Results pertaining to Proposition 2

This section deals with the results pertaining to Proposition 2, which stated that incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial mindset than incubatees who were still in the program. To address this proposition, the independent t-test was computed to compare the difference between the means of the incubatees who completed incubation with the means of the incubatees who were still in an incubation program.

The test depended on the following assumptions:

- The variances of the two groups must be homogeneous. The standard deviations calculated from the groups must not differ significantly. The Levenes' test was computed to test for homogeneity of variance.

- The data must be normally distributed as the test is a parametric test. The variable under consideration must be continuous. The Kolmogorov-Smirnov test and Shapiro-Wilk test were used to test for normality of the data. Fields (2013) cautioned that other methods of testing normality must always be done in order to make informed decisions about the extent of non-normality based on converging evidence. Frequency distributions (histograms) and probability-probability plots (P-P plots) were generated and utilised to check for normality of the data based on the new variables.

Non-parametric tests were utilised in this study when the assumption of normality was violated. The violation of normality was because of the small sample size collected during the data collection phase. The Mann-Whitney test and Kolmogorov-Smirnov test were conducted for this study. The effect size was calculated for the purpose of generating a standardised measure of the observed effect, which can be compared to other similar studies. Tables 17, 18, 19 and 20 were used for the interpretation of the t-test.

Table 17: Statistical summary for incubatees who completed and those who have not completed (entrepreneurial mindset construct)

Sub-constructs	Outcome	N	Mean	Std. Deviation	Std. Error Mean
Goal orientation	Complete	53	4.01	.86	.119
	Incomplete	27	2.99	1.52	.293
Metacognitive knowledge	Complete	52	3.92	.81	.113
	Incomplete	27	2.93	1.43	.276
Metacognitive experience	Complete	52	4.06	.73	.101
	Incomplete	27	2.89	1.40	.269
Metacognitive choice	Complete	52	4.04	.77	.107
	Incomplete	27	2.75	1.36	.263
Monitoring	Complete	52	3.95	.84	.116
	Incomplete	27	2.93	1.46	.281
Entrepreneurial mindset	Complete	53	3.99	.73	.100
	Incomplete	27	2.90	1.40	.269

As ascertained in Table 17, 53 incubatees had completed incubation and 27 had not completed the incubation programme. Table 18, depicts the output of the Levene's test, which was computed to test for homogeneity of variance.

Table 18: Output for Levene's test for equality of variances comparing the means of incubatees who have completed and those who have not completed (entrepreneurial mindset construct)

Sub-constructs	Assumption of Variance	F	Sig.
Goal orientation	Equal variances not assumed	.810	.000
Metacognitive knowledge	Equal variances not assumed	.015	.000
Metacognitive experience	Equal variances not assumed	.644	.000
Metacognitive choice	Equal variances not assumed	.807	.000
Monitoring	Equal variances not assumed	.011	.000
Entrepreneurial mindset	Equal variances not assumed	.292	.000

Table 18 shows that the Levene's test for all constructs is non-significant ($p<0.05$) therefore equal variance is not assumed in the data analysis. Table 19 depicts the effect size. The effect size was calculated for the purpose of generating a standardised measure of the observed effect, which can be compared to other similar studies.

Table 19: Effect size for independent t-test on incubation complete and incomplete

Item	t	t^2	df	t^2+df	$t^2/(t^2+df)$	$\sqrt{[t^2/(t^2+df)]}$
Goal	3.221	10.375	34.74	45.115	0.230	0.480
Knowledge	3.325	11.056	34.941	45.997	0.240	0.490
Experience	4.051	16.411	33.52	49.931	0.329	0.573
Choice	4.55	20.703	34.93	55.633	0.372	0.610
Monitoring	3.348	11.209	35.155	46.364	0.242	0.492
Self-efficacy	2.791	7.790	34.362	42.152	0.185	0.430
Mindset	3.801	14.448	33.394	47.842	0.302	0.550

Table 20: Output of t-test for equality of means for incubatees who have completed and those who have not completed (entrepreneurial mindset construct)

Sub-construct	Assumption of Variance	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Goal orientation	Equal variances assumed	3.822	78	.000	1.02	.266	.488	1.548
	Equal variances not assumed	3.221	34	.003	1.02	.316	.376	1.660
Metacognitive knowledge	Equal variances assumed	3.926	77	.000	.99	.253	.489	1.495
	Equal variances not assumed	3.325	34	.002	.99	.298	.386	1.597
Metacognitive experience	Equal variances assumed	4.879	77	.000	1.16	.239	.689	1.640
	Equal variances not assumed	4.051	33	.000	1.16	.287	.580	1.749
Metacognitive choice	Equal variances assumed	5.373	77	.000	1.29	.240	.812	1.769
	Equal variances not assumed	4.550	34	.000	1.29	.284	.715	1.867
Monitoring	Equal variances assumed	3.941	77	.000	1.02	.258	.503	1.531
	Equal variances not assumed	3.348	35	.002	1.02	.304	.400	1.634
Total entrepreneurial mindset	Equal variances assumed	4.601	78	.000	1.09	.237	.619	1.564
	Equal variances not assumed	3.801	33	.001	1.09	.287	.508	1.676

Table 20 depicts the output of the t-test, which was computed to compare the difference between the means of the incubatees who completed incubation with the means of the incubatees who were still in an incubation program.

The interpretation of the t-test from Table 20 is as follows for each construct.

Goal orientation

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to define goals, understand how the accomplishment of a task relates to goals, set specific goals before beginning a task, ask how well goals are accomplished, and frequently assess progress against set objectives when performing a task (M = 4.01, SE = 0.12), than incubatees who were still in the program (M = 2.99, SE = 0.29). The difference, 1.02, 95% CI [0.376, 1.660], was not significant t(34) = 3.22, p = 0.003; it also did represented a large sized effect, r = 0.48.

Metacognitive knowledge

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to rely on several ways to solve a problem, challenge his/her own assumptions about a task before starting, think about how others may react to their actions, automatically employ strategies that have worked in the past, perform best when already had knowledge of the task, create own examples to make information more meaningful, try to use strategies that have worked in the past, ask him/herself questions about the task before starting, try to translate new information into his/her own words, try to break problems down into smaller components, and focus on the meaning and significance of new information (M = 3.92, SE = 0.11), than incubatees who were still in the program (M = 2.93, SE = 0.28). The difference, 0.99, 95% CI [0.386, 1.597], was significant t(34) = 3.33, p = 0.002; it also represented a large sized effect, r = 0.49.

Metacognitive experience

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to think about what really needs to be accomplished before starting a task, use different strategies depending on the situation, organise time and information to best accomplish goals, consciously focus attention on important information, rely on intuition to determine the most effective strategy to use, and depend on intuition to help formulate strategies (M = 4.06, SE = 0.10), than incubatees who were still in the program (M = 2.89, SE = 0.27). The difference, 1.16, 95% CI [0.580, 1.749], was significant $t(33) = 4.05$, $p = 0.000$; it represented a large sized effect, $r = 0.57$.

Metacognitive choice

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to consider all options when solving a problem, seek an easier way to do things after the completion of a task, consider all the options after solving a problem, re-evaluate assumptions when confused, and ask if one has learned as much as one could have when finished with the task (M = 4.04, SE = 0.11), than incubatees who were still in the program (M = 2.75, SE = 0.26). The difference, 1.29, 95% CI [0.715, 1.867], was significant $t(34) = 4.55$, $p = 0.000$; it represented a large sized effect, $r = 0.61$.

Metacognitive monitoring

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to periodically review to help understand important relationships, stop and go back over information that is not clear, be aware of what strategies are used when engaged in a given task, analyse the usefulness of a given strategy while engaged in a given task, pause regularly to check comprehension of the problem or situation at hand, question how well one is doing while performing a novel task, and stop and re-read when getting confused (M = 3.95, SE = 0.12), than incubatees who were still in the program (M = 2.93, SE = 0.28). The difference, 1.02, 95% CI [0.400, 1.634], was significant $t(35) = 3.35$, $p = 0.002$; it represented a large sized effect, $r = 0.49$.

Entrepreneurial self-efficacy

On average, incubatees who had completed an incubation program perceived incubation to impact more on their entrepreneurial self-efficacy (M = 3.91, SE = 0.10), than incubatees who were still in the program (M = 3.11, SE = 0.27). The difference, 0.80, 95% CI [0.217, 1.375], was significant t(34) = 2.79, p = 0.009; it also represented a large sized effect, r = 0.43.

Entrepreneurial mindset

On average, incubatees who had completed an incubation program perceived incubation to impact more on their entrepreneurial mindset (M = 3.99, SE = 0.10), than incubatees who were still in the program (M = 2.90, SE = 0.27). The difference, 1.09, 95% CI [0.508, 1.676], was significant t(33) = 3.80, p = 0.001; it represented a large sized effect, r = 0.55.

4.6.1 Normality test (Kolmogorov–Smirnov test and Shapiro–Wilk test)

The Kolmogorov–Smirnov test and Shapiro–Wilk test were computed to test for normality of the data, while it was not require to compute both tests, this was one with the intention of comparing the findings of the two tests. Table 21 depicts the results of the Kolmogorov- Smirnov test.

Table 21: Kolmogorov- Smirnov test within the complete and incomplete groups (entrepreneurial mindset construct)

Sub-construct	Outcome	Statistic	Df	Sig.
Goal orientation	Complete	.126	53	.034
	Incomplete	.177	27	.030
Metacognitive knowledge	Complete	.109	52	.173
	Incomplete	.181	27	.023
Metacognitive experience	Complete	.112	52	.099
	Incomplete	.186	27	.017

Sub-construct	Outcome	Statistic	Df	Sig.
Metacognitive choice	Complete	.134	52	.021
	Incomplete	.196	27	.009
Monitoring	Complete	.167	52	.001
	Incomplete	.167	27	.052
Total entrepreneurial mindset	Complete	.131	53	.025
	Incomplete	.174	27	.035

Table 22 depicts the results of the Shapiro-Wilk test.

Table 22: Shapiro–Wilk test within the complete and incomplete groups (entrepreneurial mindset construct)

Sub-construct	Outcome	Statistic	Df	Sig.
Goal orientation	Complete	.911	53	.001
	Incomplete	.867	27	.003
Metacognitive knowledge	Complete	.930	52	.005
	Incomplete	.854	27	.001
Metacognitive experience	Complete	.888	52	.000
	Incomplete	.849	27	.001
Metacognitive choice	Complete	.897	52	.000
	Incomplete	.890	27	.008
Monitoring	Complete	.912	52	.001
	Incomplete	.868	27	.003
Total entrepreneurial mindset	Complete	.907	53	.001
	Incomplete	.870	27	.003

The results on the Kolmogorov–Smirnov test in Table 21 and the Shapiro–Wilk test in Table 22 are interpreted as follows:

Goal orientation

The goal orientation scores for complete, D(53) = 0.126, p = .034, were significantly different from a normal distribution. The goal orientation scores for incomplete, D(27) = 0.177, p = .030, were significantly different from a normal distribution.

Metacognitive knowledge

The metacognitive knowledge scores for complete, D(53) = 0.109, p = .173, did not deviate significantly from a normal distribution. The metacognitive knowledge scores for incomplete, D(27) = 0.181, p = .023, were significantly different from a normal distribution.

However, the Shapiro-Wilk test indicates that the metacognitive knowledge scores for complete, D(27) = 0.930, p = .005, were significantly different from a normal distribution.

Metacognitive experience

The metacognitive experience scores for complete, D(53) = 0.112, p = .099, did not deviate significantly from a normal distribution. The metacognitive experience scores for incomplete, D(27) = 0.186, p = .017, were significantly different from a normal distribution.

However, the Shapiro-Wilk test indicates that the metacognitive experience scores for complete, D(27) = 0.888, p < .001, were significantly different from a normal distribution.

Metacognitive choice

The metacognitive choice scores for complete, D(53) = 0.134, p = .021, were significantly different from a normal distribution. The metacognitive choice scores for incomplete, D(27) = 0.196, p = .009, were significantly different from a normal distribution.

Monitoring

The monitoring scores for complete, D(53) = 0.167, p = .001, were significantly different from a normal distribution. The monitoring scores for incomplete, D(27) = 0.167, p = .052, did not deviate significantly from a normal distribution.

However, the Shapiro-Wilk test indicates that the monitoring scores for incomplete, D(27) = 0.868, p = .003, were significantly different from a normal distribution.

Entrepreneurial self-efficacy

The entrepreneurial self-efficacy scores for complete, D(53) = 0.114, p = .086, did not deviate significantly from a normal distribution. The entrepreneurial self-efficacy scores for incomplete, D(27) = 0.180, p = .025, were significantly different from a normal distribution.

However, the Shapiro-Wilk test indicates that the entrepreneurial self-efficacy scores for complete, D(27) = 0.937, p = .008, were significantly different from a normal distribution.

Entrepreneurial mindset

The entrepreneurial mindset scores for complete, D(53) = 0.131, p = .025, were significantly different from a normal distribution. The entrepreneurial mindset scores for incomplete, D(27) = 0.174, p = .035, were significantly different from a normal distribution.

4.6.2 Normality test (graphical test for normality)

The Kolmogorov-Smirnov and Shapiro-Wilk tests indicated that the data is mostly not normally distributed. There were some disagreements between the tests in some instances. Appendix C, Appendix D, and Appendix E depict the P-P plots, the Q-Q Plots, and frequency distribution plots of the constructs respectively. The P-P plots indicated that the data is not normally distributed as it formed an S-shape along the diagonal, indicating skewness. The Q-Q plots indicated that the

data is not normally distributed as it forms an S-shape along the diagonal, indicating skewness. These findings were confirmed by studying the frequency distributions, which indicated that the data is not normally distributed.

4.6.3 Non parametric test (Mann-Whitney test and Kolmogorov-Smirnov test)

Non-parametric tests were utilised in this study when the assumption of normality was violated. The effect size was calculated for the purpose of generating a standardised measure of the observed effect, which can be compared to other similar studies. Table 23 depicts the effect size.

Table 23: Effect size for Mann–Whitney test on incubation complete and incomplete

Item	z	N	√N	z/√N
Goal	-2.694	80	8.944272	-0.3012
Knowledge	-2.794	79	8.888194	-0.31435
Experience	-3.647	79	8.888194	-0.41032
Choice	-4.142	79	8.888194	-0.46601
Monitoring	-2.932	79	8.888194	-0.32988
Self-efficacy	-2.336	80	8.944272	-0.26117
Mindset	-3.41	80	8.944272	-0.38125

Table 23 depicts the results of the Mann-Whitney test.

Table 24: Summary of Mann-Whitney test for outcome pertaining entrepreneurial mindset construct (Significance level is .05)

Null Hypothesis	Sig.	Decision
The distribution of goal orientation is the same across categories of outcome	.007	Reject the Null Hypothesis
The distribution of metacognitive knowledge is the same across categories of outcome	.005	Reject the Null Hypothesis
The distribution of metacognitive experience is the same across categories of outcome	.000	Reject the Null Hypothesis
The distribution of metacognitive choice is the same across categories of gender	.000	Reject the Null Hypothesis
The distribution of monitoring is the same across categories of outcome	.003	Reject the Null Hypothesis
The distribution of entrepreneurial mindset is the same across categories of outcome	.001	Reject the Null Hypothesis

Table 24 depicts the outcome of the Mann-Whitney test comparing the mean scores of the constructs entrepreneurial mindset and the sub-constructs of goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, monitoring, by incubation status. Detailed results of the tests are indicated in APPENDIX F. The results of the Mann-Whitney test were used to answer Proposition 2.

4.6.4 Results pertaining to Proposition 2

Proposition 2 stated that incubatees who completed incubation perceived a high positive relation between incubation and their entrepreneurial mindset than incubatees who were still in the program. The results of the Mann-Whitney test indicated that there was a significant difference between incubatees who completed incubation and those who were still in the program on their perceived impact of incubation on all sub-constructs (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and metacognitive monitoring) and the main construct.

Goal orientation

Incubatees who had completed (M = 4.01) perceived significantly more impact on their ability to define goals, understand how the accomplishment of a task relates to goals, set specific goals before beginning a task, ask how well goals are accomplished, and frequently assess progress against set objectives when performing a task than incubatees who were still in the program (M = 2.99), U = 452.00, z = -2.694, p = .007, r = -0.301.

Metacognitive knowledge

Incubatees who had completed (M = 3.92) perceived significantly more impact on their ability to rely on several ways to solve a problem, challenge his/her own assumptions about a task before starting, think about how others may react to their actions, automatically employs strategies that have worked in the past, perform best when already has knowledge of the task, create own examples to make information more meaningful, try to use strategies that have worked in the past, ask him/herself questions about the task before starting, try to translate new information into his/her own words, try to break problems down into smaller components, and focus on the meaning and significance of new information, than incubatees who were still in the program (M = 2.93), U = 432.00, z = -2.279, p = .005, r = -0.314.

Metacognitive experience

Incubatees who had completed (M = 4.06) perceived significantly more impact on their ability to think about what really needs to be accomplished before starting a task, use different strategies depending on the situation, organise time and information to best accomplish goals, consciously focus attention on important information, rely on intuition to determine the most effective strategy to use, and depend on intuition to help formulate strategies, than incubatees who were still in the program (M = 2.89), U = 350.00, z = -3.647, p < .001, r = -0.410.

Metacognitive choice

Incubatees who had completed (M = 4.04) perceived significantly more impact more on their ability to consider all options when solving a problem, seek an easier way to do things after the completion of a task, consider all the options after solving a problem, re-evaluate assumptions when confused, and ask if one has learned as much as one could have when finished with the task than incubatees who were still in the program (M = 2.75), U = 302.50, z = -4.142, p < .001, r = -0.466.

Metacognitive monitoring

Incubatees who had completed (M = 3.95) perceived significantly more impact on their ability to periodically review to help understand important relationships, stop and go back over information that is not clear, be aware of what strategies are used when engaged in a given task, analyse the usefulness of a given strategy while engaged in a given task, pause regularly to check comprehension of the problem or situation at hand, question how well one is doing while performing a novel task, and stop and re-read when getting confused, than incubatees who were still in the program (M = 2.93), U = 419.00, z = -2.932, p = .003, r = -0.330.

Entrepreneurial mindset

Incubatees who had completed (M = 3.99) perceived significantly more impact on their entrepreneurial mindset, than incubatees who were still in the program (M = 2.90), U = 380.50, z = -3.410, p = .001, r = -0.381.

4.6.5 Conclusions drawn from results pertaining to Proposition 2

Incubatees who had completed incubation perceived a significantly higher positive impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

4.7 Results pertaining to Proposition 3

This section deals with results pertaining to Proposition 3, which stated that incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy. To address this proposition, composite scores for the constructs that pertain to entrepreneurial self-efficacy were calculated subsequent to confirmation of the internal consistency of the scale. Frequency responses for each item were also calculated. The proposition was addressed based on the demographic output of the composite score calculation and the output of the response frequencies.

In Section 0, the various constructs were found to be reliable. Single scores were therefore determined for each construct. Composite scores for the sub-constructs were generated using SPSS version 21 by combining the scores of the individual items that form the sub-construct. For the main constructs of entrepreneurial self-efficacy, the composite scores of the sub-constructs that formed the respective main constructs were used to generate the composite scores.

To generate a composite score for searching, scores for items 1, 2 and 3 were used. To generate a composite score for entrepreneurial self-efficacy composite scores for searching, planning, marshalling, implement-people, and implement-financial were used. The composite scores for the remainder of the sub-constructs and the main construct of entrepreneurial self-efficacy were calculated using the same methodology. The items used to generate composite scores for each sub-construct are indicated in Table 10. Table 25 depicts the descriptive statistics for the composite scores of the constructs pertaining to the entrepreneurial self-efficacy.

Table 25: Descriptive statistics of sub-constructs pertaining to entrepreneurial self-efficacy

Sub-construct	N	Minimum	Maximum	Mean	SD
Searching	87	1.00	5.00	3.84	1.19
Planning	87	1.00	5.00	3.60	1.17
Marshalling	87	1.00	5.00	3.92	1.11
Implementing-people	87	1.00	5.00	3.46	1.14
Implementing-financial	87	1.00	5.00	3.65	1.29
Total entrepreneurial self-efficacy	87	1.00	5.00	3.69	1.06

The mean of the construct, searching was 3.84 with a standard deviation of 1.19. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that searching scores were between neutral and moderate effect.

The mean of the construct, planning was 3.60 with a standard deviation of 1.17. The scale of the individual items that form this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that planning scores were between neutral and moderate effect.

The mean of the construct, marshalling was 3.92 with a standard deviation of 1.11. The scale of the individual items that formed this construct is stated was follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that marshalling scores were between neutral and moderate effect.

The mean of the construct, implementing people was 3.46 with a standard deviation of 1.14. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect

and 5= major effect. This would mean that implementing people scores were between neutral and moderate effect.

The mean of the construct, implementing financial was 3.65 with a standard deviation of 1.29. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that implementing financial scores were between neutral and moderate effect.

The mean of the construct, entrepreneurial self-efficacy was 3.69 with a standard deviation of 1.06. The scale of the individual items that formed this construct was stated as follows: 1= no effect; 2= minor effect; 3= neutral; 4= moderate effect and 5= major effect. This would mean that entrepreneurial self-efficacy scores were between neutral and moderate effect.

Tables 26, 27, 28, 29 and 30 depict the response frequencies for the items.

Table 26: Frequencies for searching items

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 1	10	11.5%	4	4.6%	13	14.9%	24	27.6%	36	41.4%
Question 2	8	9.3%	3	3.5%	12	14.0%	30	34.9%	33	38.4%
Question 3	8	9.3%	7	8.1%	14	16.3%	23	26.7%	34	39.5%

For searching, the incubatees had the highest response indicating that incubation had a major impact on their ability to brainstorm (come up with) a new idea for a product or service (41.4 percent).

Table 27: Frequencies for planning items

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 4	8	9.3%	8	9.3%	13	15.1%	33	38.4%	24	27.9%
Question 5	10	11.6%	8	9.3%	16	18.6%	29	33.7%	23	26.7%
Question 6	11	12.9%	11	12.9%	11	12.9%	23	27.1%	29	34.1%
Question 7	9	10.3%	8	9.2%	14	16.1%	31	35.6%	25	28.7%

For planning, the incubatees had the highest response indicating that incubation had a moderate impact on their ability to estimate customer demand for a new product or service (38.4 percent).

Table 28: Frequencies for marshalling items

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 8	8	9.3%	4	4.7%	14	16.3%	27	31.4%	33	38.4%
Question 9	5	5.7%	5	5.7%	10	11.5%	25	28.7%	42	48.3%
Question 10	8	9.4%	3	3.5%	19	22.4%	21	24.7%	34	40.0%

For marshalling, the incubatees had the highest response indicating that incubation had a major impact on their ability to network - make contact with and exchange information with others (48.3 percent).

Table 29: Frequencies for implementing people

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 11	10	11.6%	7	8.1%	25	29.1%	27	31.4%	17	19.8%
Question 12	10	11.8%	9	10.6%	26	30.6%	21	24.7%	19	22.4%
Question 13	10	11.6%	7	8.1%	18	20.9%	32	37.2%	19	22.1%
Question 14	10	11.6%	9	10.5%	18	20.9%	25	29.1%	24	27.9%
Question 15	10	11.6%	6	7.0%	13	15.1%	33	38.4%	24	27.9%
Question 16	12	14.0%	7	8.1%	24	27.9%	23	26.7%	20	23.3%

For implementing people, the incubatees had the highest response indicating that incubation had a moderate impact on their ability to delegate tasks and responsibilities to employees in their business (37.2 percent).

Table 30: Frequencies for implementing financial

	No effect		Minor effect		Neutral		Moderate effect		Major effect	
	Count	Row N	Count	Row N	Count	Row N	Count	Row N	Count	Row N
Question 17	8	9.4%	7	8.2%	14	16.5%	20	23.5%	36	42.4%
Question 18	9	10.3%	8	9.2%	19	21.8%	20	23.0%	31	35.6%
Question 19	13	14.9%	9	10.3%	15	17.2%	21	24.1%	29	33.3%

For implementing financial, the incubatees had the highest response indicating that incubation had a major impact on their ability to organise and maintain the financial records of their business (42.4 percent).

Proposition 3 stated that incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy. Descriptive statistics based on composite scores of the sub-constructs for entrepreneurial self-efficacy and the main construct of entrepreneurial self-efficacy are contained in Table 25. The means of all constructs pertaining to entrepreneurial self-efficacy (searching, planning, marshalling, implementing-people, and implementing financial) are all between three and four with marshalling having the highest mean at 3.92. Table

26, 27, 28, 29 and 30 indicate the frequencies of the scores for items pertaining to entrepreneurial self-efficacy. Question 9 (network - make contact with and exchange information with others, major impact) in Table 28 had the highest rate of responses at 48 percent. Question 2 (identify the need for a new product or service, minor effect) in Table 26 had the lowest rate of responses at 3.5 percent.

4.7.1 Conclusions drawn from results pertaining to Proposition 3

In reviewing the results in Table 25 pertaining to entrepreneurial self-efficacy (searching, planning, marshalling, implementing-people, and implementing-financial), it is apparent that the perceived impact is neither neutral nor moderate. It is between the two measures, however it is greater than 3.5 for all constructs. It is concluded therefore, that incubatees perceived a moderate impact of business incubation on their entrepreneurial self-efficacy with marshalling being impacted slightly more than the other constructs. Marshalling is also impacted more than all the other constructs on the scale. This Indicates that incubation had the greatest impact on marshalling compared to other constructs as perceived by the incubatees. Incubatees perceived a major impact on their ability to network - make contact with and exchange information with others. They perceived a minor impact on their ability to identify the need for a new product or service.

4.8 Results pertaining to Proposition 4

This section deals with the results pertaining to Proposition 4, which stated that incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program. To address this proposition, the independent t-test was computed to compare the difference between the means of the incubatees who completed incubation with the means of the incubatees who were still in an incubation program.

The test depends on the following assumptions:

- The variances of the two groups must be homogeneous. The standard deviations calculated from the groups must not differ significantly. The Levenes' test was computed to test for homogeneity of variance.

- The data must be normally distributed as the test is a parametric test. The variable under consideration must be continuous. The Kolmogorov-Smirnov test and Shapiro-Wilk test were used to test for normality of the data. Fields (2013) cautioned that other methods of testing normality must always be done in-order to make informed decisions about the extent of non-normality based on converging evidence. Frequency distributions (histograms) and probability-probability plots (P-P plots) were generated and utilised to check for normality of the data based on the new variables.

Non-parametric tests were utilised in this study when the assumption of normality was violated. The violation of normality was because of the small sample size collected during the data collection phase. The Mann-Whitney test and Kolmogorov-Smirnov test were conducted for this study. The effect size was calculated for the purpose of generating a standardised measure of the observed effect, which can be compared to other similar studies. Tables, 31, 32, 33 and 34 were used for the interpretation of the t-test.

Table 31: Statistical summary for incubatees who completed and those who have not completed (entrepreneurial self-efficacy construct)

Constructs	Outcome	N	Mean	Std. Deviation	Std. Error Mean
Searching	Complete	53	4.07	.83	.115
	Incomplete	27	3.22	1.61	.310
Planning	Complete	53	3.79	.95	.130
	Incomplete	27	3.07	1.46	.282
Marshalling	Complete	53	4.14	.78	.107
	Incomplete	27	3.31	1.47	.283
Implementing people	Complete	53	3.67	.95	.130
	Incomplete	27	2.90	1.36	.261
Implementing financial	Complete	53	3.86	1.06	.145
	Incomplete	27	3.04	1.58	.303
Total entrepreneurial self-efficacy	Complete	53	3.91	.76	.105
	Incomplete	27	3.11	1.38	.265

From Table 31, 53 incubatees had completed incubation and 27 of the incubatees had not completed. Table 32 depicts the output of the Levene's test, which was computed to test for homogeneity of variance.

Table 32: Output for Levene's test for equality of variances comparing the means of incubatees who have completed and those who have not completed (entrepreneurial self-efficacy construct)

Sub-constructs	Assumption of Variance	F	Sig.
Searching	Equal variances not assumed	.063	.000
Planning	Equal variances not assumed	1.053	.002
Marshalling	Equal variances not assumed	.112	.000
Implementing people	Equal variances not assumed	.464	.004
Implementing financial	Equal variances not assumed	.027	.000
Total entrepreneurial self-efficacy	Equal variance is not assumed	.140	.000

Table 32 shows output for the Levene's test for all constructs as non-significant ($p<.05$); therefore equal variance is not assumed in the data analysis. Table 33 depicts the effect size, which was calculated for generating a standardised measure of the observed effect, which can be compared to other similar studies.

Table 33: Effect size for independent t-test on incubation complete and incomplete

Item	t	t^2	df	t^2+df	$t^2/(t^2+df)$	$\sqrt{[t^2/(t^2+df)]}$
Searching	2.552	6.513	33.258	39.771	0.164	0.405
Planning	2.309	5.331	37.46	42.791	0.125	0.353
Marshalling	2.719	7.393	33.614	41.007	0.180	0.425
People	2.654	7.044	39.297	46.341	0.152	0.390
Financial	2.443	5.968	38.307	44.275	0.135	0.367

Table 34, depicts the output of the t-test, which was computed to compare the difference between the means of the incubatees who completed incubation with the means of the incubatees who were still in an incubation program.

Table 34: Output of t-test for equality of means for incubatees who have completed and those who have not completed (entrepreneurial self-efficacy construct)

Sub-constructs	Assumption of Variance	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Searching	Equal variances assumed	3.095	78	.003	.84	.273	.301	1.387
	Equal variances not assumed	2.552	33	.015	.84	.331	.171	1.516
Planning	Equal variances assumed	2.644	78	.010	.72	.271	.177	1.257
	Equal variances not assumed	2.309	37	.027	.72	.310	.0881	1.346
Marshalling	Equal variances assumed	3.280	78	.002	.82	.251	.324	1.323
	Equal variances not assumed	2.719	33	.010	.82	.303	.208	1.439
Implementing people	Equal variances assumed	2.975	78	.004	.77	.260	.256	1.291
	Equal variances not assumed	2.654	39	.011	.77	.292	.184	1.363
Implementing financial	Equal variances assumed	2.770	78	.007	.82	.297	.231	1.412
	Equal variances not assumed	2.443	38	.019	.82	.336	.141	1.501
Total entrepreneurial self-efficacy	Equal variances assumed	3.330	78	.001	.80	.240	.320	1.272
	Equal variances not assumed	2.791	34	.009	.80	.285	.217	1.375

The interpretation of the t-test from Table 34 is as follows for each construct.

Searching

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to develop unique ideas or identify special opportunities (M = 4.07, SE = 0.12), than incubatees who were still in the program (M = 3.22, SE = 0.31). The difference, 0.84, 95% CI [0.171, 1.516], was significant t(33) = 2.55, p = .015; it also represented a large sized effect, r = 0.41.

Planning

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to convert ideas into feasible business plans (M = 3.79, SE = 0.13), than incubatees who were still in the program (M = 3.07, SE = 0.28). The difference, 0.72, 95% CI [0.088, 0.668], was significant t(37) = 2.31, p = .027; it also represented a medium sized effect, r = 0.35.

Marshalling

On average, incubatees who has completed an incubation program perceived incubation to impact more on their ability to assemble resources to bring the venture into existence (M = 4.14, SE = 0.11), than incubatees who were still in the program (M = 3.31, SE = 0.28). The difference, 0.82, 95% CI [0.208, 1.439], was significant t(33) = 2.72, p = 0.010; it also represented a large sized effect, r = 0.43.

Implementing people

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to manage relationships with suppliers, customers, employees, and providers of capital (M = 3.67, SE = 0.13), than incubatees who were still in the program (M = 2.90, SE = 0.26). The difference, 0.74, 95% CI [0.184, 1.363], was significant t(39) = 2.44, p = 0.011; it also represented a medium sized effect, r = 0.39.

Implementing financial

On average, incubatees who had completed an incubation program perceived incubation to impact more on their ability to manage the financial aspects of the venture (M = 3.86, SE = 0.15), than incubatees who were still in the program (M = 3.04, SE = 0.30). The difference, 0.82, 95% CI [0.141, 1.502], was significant t(38) = 2.44, p = 0.019; it also represented a medium sized effect, r = 0.37.

4.8.1 Normality test (Kolmogorov-Smirnov test and Shapiro-Wilk test)

The Kolmogorov-Smirnov test and Shapiro-Wilk test were computed to test for normality of the data, while it was not required to compute both tests, this was one with the intention of comparing the findings of the two tests. Table 35 depicts the results of the Kolmogorov- Smirnov test.

Table 35: Kolmogorov- Smirnov test within the complete and incomplete groups (entrepreneurial self-efficacy construct)

Construct	Outcome	Statistic	Df	Sig.
Searching	Complete	.211	53	.000
	Incomplete	.175	27	.033
Planning	Complete	.150	53	.005
	Incomplete	.159	27	.076
Marshalling	Complete	.165	53	.001
	Incomplete	.161	27	.072
Implementing People	Complete	.113	53	.086
	Incomplete	.159	27	.079
Implementing financial	Complete	.157	53	.002
	Incomplete	.174	27	.035
Total entrepreneurial self-efficacy	Complete	.114	53	.086
	Incomplete	.180	27	.025

Table 36 depicts the results of the Shapiro-Wilk test.

Table 36: Shapiro-Wilk test within the complete and incomplete groups (entrepreneurial self-efficacy construct)

Construct	Outcome	Statistic	Df	Sig.
Searching	Complete	.896	53	.000
	Incomplete	.836	27	.001
Planning	Complete	.928	53	.004
	Incomplete	.876	27	.004
Marshalling	Complete	.906	53	.001
	Incomplete	.869	27	.003
Implementing People	Complete	.935	53	.006
	Incomplete	.904	27	.017
Implementing financial	Complete	.891	53	.000
	Incomplete	.862	27	.002
Total entrepreneurial self-efficacy	Complete	.937	53	.008
	Incomplete	.882	27	.005

The results on the Kolmogorov-Smirnov test in Table 35 the Shapiro-Wilk test in Table 36 are interpreted as follows:

Searching

The searching scores for those incubatees who completed incubation (complete), $D(53) = 0.211$, $p < .001$, were significantly different from a normal distribution. The searching scores for those incubatees who were still in incubation (Incomplete), $D(27) = 0.175$, $p = .033$, is significantly different from a normal distribution.

Planning

The planning scores for complete, $D(53) = 0.150$, $p = .005$, were significantly different from a normal distribution. The planning scores for incomplete, $D(27) = 0.159$, $p = .076$, did not deviate significantly from a normal distribution.

However, the Shapiro-Wilk test indicates that the planning scores for incomplete, D(27) = 0.876, p = .004, were significantly different from a normal distribution.

Marshalling

The marshalling scores for complete, D(53) = 0.165, p = .001, were significantly different from a normal distribution. The marshalling scores for incomplete, D(27) = 0.161, p = .072, did not deviate significantly from a normal distribution.

However, the Shapiro-Wilk test indicates that the marshalling scores for incomplete, D(27) = 0.869, p = .003, were significantly different from a normal distribution.

Implementing people

The implementing people scores for complete, D(53) = 0.113, p = .086, is not significantly different from a normal distribution. The implementing people scores for incomplete, D(27) = 0.159, p = .079, did not deviate significantly from a normal distribution.

However, the Shapiro-Wilk test indicates that the implementing people scores for complete, D(53) = 0.935, p = .006, were significantly different from a normal distribution. The implementing people scores for incomplete, D(27) = 0.904, p = .017, did deviate significantly from a normal distribution.

Implementing financial

The implementing financial scores for complete, D(53) = 0.157, p = .002, were significantly different from a normal distribution. The implementing financial scores for incomplete, D(27) = 0.174, p = .035, were significantly different from a normal distribution.

4.8.2 Normality test (graphical test for normality)

The Kolmogorov-Smirnov and Shapiro-Wilk tests indicated that the data is mostly not normally distributed. There were some disagreements between the tests in

some instances. APPENDIX C, APPENDIX D, and APPENDIX E depict the P-P plots, the Q-Q Plots, and frequency distribution plots of the constructs respectively. The P-P plots indicated that the data is not normally distributed as it forms an S-shape along the diagonal, indicating skewness. The Q-Q plots indicated that the data is not normally distributed as it forms an S-shape along the diagonal, indicating skewness. These findings were confirmed by studying the frequency distributions, which indicated that the data is bot normally distributed.

4.8.3 Non parametric test (Mann-Whitney test and Kolmogorov-Smirnov test)

Non-parametric tests were utilised in this study when the assumption of normality was violated. The effect size was calculated for the purpose of generating a standardised measure of the observed effect, which can be compared to other similar studies. Table 37 depicts the effect size.

Table 37: Effect size for Mann-Whitney test on incubation complete and incomplete

Item	z	N	√N	z/√N
Searching	-1.825	80	8.944272	-0.20404
Planning	-1.981	80	8.944272	-0.22148
Marshalling	-2.176	80	8.944272	-0.24328
People	-2.401	80	8.944272	-0.26844
Financial	-2.08	80	8.944272	-0.23255

Table 3 depicts the results of the Mann-Whitney test.

Table 38: Summary of Mann-Whitney test for outcome pertaining entrepreneurial self-efficacy construct)

Null Hypothesis	Sig.	Decision
The distribution of searching is the same across categories of outcome	.068	Retain the Null Hypothesis
The distribution of planning is the same across categories of outcome	.048	Reject the Null Hypothesis
The distribution of marshalling is the same across categories of outcome	.030	Reject the Null Hypothesis
The distribution of implementing people is the same across categories of outcome	.016	Reject the Null Hypothesis
The distribution of implementing financial is the same across categories of outcome	.038	Reject the Null Hypothesis
The distribution of entrepreneurial self-efficacy is the same across categories of outcome	.020	Reject the Null Hypothesis

Note: Significance level is 0.05

Table 38 depicts the outcome of the Mann-Whitney test comparing the mean scores of the construct entrepreneurial self-efficacy and the sub-constructs of searching, planning, marshalling, implementing people, and implementing financial incubation status. Detailed results of the tests are indicated in APPENDIX F. The results of the Mann-Whitney test were used to answer Proposition 4.

4.9 Results pertaining to Proposition 4

Proposition 4 stated that incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program. The results of the Mann-Whitney test indicated that there was no significant difference between incubatees who completed incubation and incubatees who were still in the program on their perceived impact of business incubation on the sub-construct of searching. There was however, a significant difference between incubatees who completed incubation and incubatees who were still in the program on their perceived

impact of business incubation for the sub-constructs of planning, marshalling, implementing people, and implementing financial. There was also a significant difference between incubatees who completed incubation and incubatees who were still in the program on their perceived impact of business incubation on the main construct of entrepreneurial self-efficacy. Detailed results are presented below:

Searching

The impact of incubation, as perceived by those incubatees who had completed incubation (completed), on their ability to develop unique ideas or identify special opportunities (M = 4.07), did not differ significantly from those incubatees who are still in incubation (incomplete) (M = 3.22), U = 538.00, z = -1.83, p = .068, r = -0.20.

Planning

Incubatees who had completed (M = 3.79) perceived significantly more impact on their ability to convert ideas into feasible business plans than incubatees who were still in the program (M = 3.07), U = 521.50, z = -1.98, p = .048, r = -0.22.

Marshalling

Incubatees who had completed (M = 4.14) perceived significantly more impact on their ability to assemble resources to bring the venture into existence than incubatees who were still in the program (M = 3.31), U = 503.50, z = -2.176, p = .030, r = -0.243.

Implementing people

Incubatees who had completed (M = 3.67) perceived significantly more impact on their ability to manage relationships with suppliers, customers, employees, and providers of capital than incubatees who were still in the program (M = 2.90), U = 480.00, z = -2.401, p = .016, r = -0.268.

Implementing financial

Incubatees who had completed (M = 3.86) perceived significantly more impact on their ability to manage the financial aspects of the venture than incubatees who were still in the program (M = 3.04), U = 513.00, z = -2.080, p = .038, r = -0.232.

Entrepreneurial self-efficacy

Incubatees who had completed (M = 3.91) perceived significantly more impact on their entrepreneurial self-efficacy than incubatees who were still in the program (M = 3.11), U = 486.00, z = -2.336, p = .020, r = -0.261.

4.9.1 Conclusions drawn from results pertaining to Proposition 4

Incubatees who had completed incubation perceived a higher positive relation between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

4.10 Conclusion

The demographic profile of the sample indicated that more males than females participated in the study. The participants were mostly black, with age and education levels ranging from 18 to 55 years and high school graduates to post graduate degree level respectively.

The propositions emanating from the literature review are as follows:

- *Proposition 1:* Incubatees perceived a positive impact between incubation and their entrepreneurial mindset.
- *Proposition 2:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

- *Proposition 3:* Incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy.

- *Proposition 4:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

There were no recording errors found on the data. All constructs indicated good reliability. The data was found to be mostly non-normally distributed; therefore, non-parametric tests were conducted for analysis. The results indicated the following:

- Incubatees perceived a moderate impact of business incubation on their entrepreneurial mindset with their goal orientation being impacted slightly more than the other constructs.

- Incubatees who completed incubation perceived a higher positive impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

- Incubatees perceived a moderate impact of business incubation on their entrepreneurial self-efficacy with marshalling being impacted slightly more than the other constructs.

- Incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

The following chapter discusses the results of the study and links the findings with the relevant literature.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter seeks to relate and compare the data presented and discussed in Chapter 4, pertaining to the four propositions, and link the findings to the relevant academic literature presented in Chapter 2. Findings are compared and analysed by individual propositions. After ascertaining if there is any relation between the findings of this study and those of other academic studies, this study is then concluded, having noted any discrepancies and relations that are of significance.

This chapter starts by giving an overview of the literature on business incubation by highlighting some its shortcomings in-terms of the support given to incubatees and the conflicting views related to its benefits. A discussion on the demographic profile of incubatees follows. The study's findings for the four propositions are then discussed linking them to relevant academic literature. This is then followed by conclusions of the discussion of the results.

5.2 Discussion

At the start of this research, there was uncertainty as to what the outcome of the research would be. This was because of limited research found on the chosen area of study at literature review stage. The literature on business incubation established that the intangible elements of a business incubator are as important as the tangible elements. However, very limited research was found pertaining to the intangible aspects of incubation. The tangible elements were found to be the focus of most business incubators and hence of studies related to incubation.

Another major challenge related to the context of the study, there is no clear consensus as to what constitutes an incubator in the South African context, there is no record of the incubators operating in South Africa, which industries they serve and the services they offer. Furthermore, information about incubatees

after graduation was not kept up-to-date and there was no monitoring of performance post incubation.

There was very few academic studies found pertaining to the benefits of business incubation efficacy in promoting job and wealth creation. Furthermore, there was also a lack of studies on the impact of business incubation on the individual entrepreneur. Research by Hackett and Dilts (2004) found that the impact of business incubation is important and difficult to measure. They suggested that the difficulty in measuring the impact of business incubation has contributed to the lack of peer-reviewed studies.

A review of published research by Hannon (2005) found that the research conducted on business incubators and incubation focused on the nature and make up of business incubators and the design of the incubation programs, there has been very little research focusing on the personal and professional development of the incubatees. Voisey et al. (2006) added that the intangible measures of business incubation are subjective and are difficult to measure and assess, but nonetheless they do exist.

Stephens and Onofrei (2012) found in their study that the majority of the respondents noted that it is difficult to quantify the 'soft' benefits of business incubation, however soft benefits augment the business development process. They therefore concluded that there is a need to measure the soft benefits of business incubation. Their study found that the personal development of incubatees is an important feature of business incubation. Although they were not specific about what constitutes soft measures of business incubation.

Boyd and Vozikis (1994), Chen et al. (1998), and Krueger and Brazeal (1994) stated that self-efficacy when viewed as a key antecedent to new venture intentions, is referred to as entrepreneurial self-efficacy. Research by Bandura (2006) and Zhao et al. (2005) indicated that self-efficacy is an important antecedent to entrepreneurial action.

Lichtenstein et al. (2004) in their discussions of the concept of entrepreneurial cognitions, reported that social cognitive theory purported that it is the

entrepreneurs' prevailing entrepreneurial mindset that leads to entrepreneurial behaviour, a view supported by Urban (2010, 2011, 2013). Cognition is "the process through which information is entered into memory, processed, and retrieved for later use" (Baron, 2008, p. 328; Forgas, 1995; Isen, 2002, cited in Arora et al., 2011, p. 360; Neisser, 1967, cited in Urban, 2011, p. 6; Urban, 2010).

The literature review indicated that there are limited studies of the impact of incubation on the individual entrepreneur. It also highlighted the importance of the entrepreneurial mindset and entrepreneurial self-efficacy in the entrepreneurial process.

5.3 Demographic profile of respondents

There was no study found that dealt with the demographic profile of incubatees in the South African context with which to compare the findings of the study. The findings were then compared with the demographic profiles of the studies that informed the research instrument of this study (McGee et al., 2009; Urban, 2012). The demographic profile of this study resembled more closely the demographic profile of the study by Urban (2012) than the study by McGee et al. (2009) in terms of gender, age, ethnicity and education the profile. This could be explained by the fact that the study by Urban (2012) was conducted in a similar context (South Africa) as the current study. The study by McGee et al. (2009) was conducted in a different context (United States).

In both studies, the majority of the respondents were male and the average age was 32 years. All the respondents in the study by Urban (2012) had completed an undergraduate degree whereas only 51 percent of the respondents in the current study had completed an undergraduate degree. The Urban (2012) study focused on university students, the current study focused on incubatees post incubation. The recruitment policy of some of the incubators that participated in the study did not consider academic qualifications of the applicants.

The demographic profile of the incubatees could also be explained by the findings of the various GEM reports on entrepreneurship in South Africa and the various reports on unemployment in South Africa by Stats SA (2014). Young people form the majority of incubatees (56 percent), Stats SA (2014) indicated that unemployment in South Africa in more pronounced among the youth than the adult population. The GEM report indicated that the youth are more inclined to resort to entrepreneurship as a means of creating employment for themselves.

5.4 Discussion pertaining to Proposition 1

Proposition 1 stated that incubatees perceived a positive impact between incubation and their entrepreneurial mindset. The results obtained relating to Proposition 1 indicated that incubatees perceived a moderate impact of incubation on all aspects of the entrepreneurial mindset (goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice, and monitoring). Respondents indicated that they perceived the most impact on their goal orientation. Furthermore, the response that incubation had a major impact on their ability to understand how accomplishment of a task relates to their goals had the highest number of responses.

These findings are supported by a number of studies. Bergek and Norrman (2008), and Hackett and Dilts (2004) highlighted that business incubators provide support to new ventures with the intention that they will develop into sustainable ventures, and that their support entails several dimensions such as office space, shared resources, business support, and access to networks.

Smith and Zhang (2012) stated that business incubators provide more than facilities and support services, they provide an environment in which new ventures can learn and grow in relative safety, gradually accumulating the confidence and credibility required for successful and sustainable business.

Research by Carayannis and von Zedtwitz (2005), and Buys and Mbewana (2007) proposed that in developing economies incubators can assist by bringing their resources and business knowledge. The services include physical space

programs aimed at the personal and professional development of the incubatees. Furthermore business incubators provide business counselling, coaching, and venture capital.

The study by Peters et al (2004) proposed a model that explained the role of incubators in the entrepreneurial process (Depicted in Figure 2). Their model focused on the impact of the services offered by incubators such as infrastructure, coaching, and networks and on the graduation rates of the respective incubations' tenants. Their study indicated that the services that distinguish the success of incubators relates primarily to the presence or absence of coaching and access to networks.

These studies highlighted the importance of coaching, hands-on business counselling and networking as important ingredients of incubator success. Coaching and counselling support could potentially assist in improving the incubatees' entrepreneurial mindset. The instrument for this study is included in APPENDIX A, items 19 to 55 relate to entrepreneurial mindset on the scale. The results of the study indicated that the incubatees perceived a moderate impact of incubation on all aspects of the entrepreneurial mindset (goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice, and monitoring), this finding is not surprising as the items on the scale can be impacted by both counselling and coaching.

5.5 Discussion pertaining to Proposition 2

Proposition 2 stated that incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial mindset than incubatees who were still in the program. The results of the Mann-Whitney test indicated that there was a significant difference between incubatees who had completed incubation and those who were still in the program on their perceived impact of incubation on all sub-constructs (goal orientation, metacognitive-knowledge, metacognitive-experience, metacognitive-choice, and metacognitive monitoring) and the main construct. The results of this study

indicated that incubatees who completed incubation perceived a significantly higher positive impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

These findings where expected in view of the research by Forbes (2005a) that found that entrepreneur's cognitions are changeable. Furthermore, this support the observations that there are interventions that entrepreneurs could be subjected to that could assist them to think and act entrepreneurially. While the study by Forbes (2005a) dealt specifically with cognitive biases, it does suggest that it is possible to subject incubatees to interventions that will develop their entrepreneurial mindset.

This view was further supported by a study by Urban (2011) who suggested that the applied side of research into the differentiating cognitive skills of entrepreneurs has a direct effect on curriculum development and pedagogy. If entrepreneurs possess certain cognitive skills and if these skills can be learned and/or improved upon, then it is reasonable for curriculum designers to focus their efforts on building these skills (Urban, 2011). He concluded that in the field of entrepreneurship, designing mindsets relevant to new venture creation could be useful.

5.6 Discussion pertaining to Proposition 3

Proposition 3 stated that incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy. The results obtained relating to Proposition 3 indicated that incubatees perceived a moderate impact of business incubation on their entrepreneurial self-efficacy with marshalling being impacted slightly more than the other constructs. Marshalling is also impacted more than all the other constructs on the scale. This indicates that incubation had the greatest impact on marshalling compared to other constructs as perceived by the incubatees. Moreover, the response that incubatees perceived a major impact on their ability to network - make contact with and exchange information with others, had the highest number of responses.

The literature pertaining to Proposition 3 is the same as that pertaining to Proposition 2. This is not surprising as the literature review is quite clear on the linkage between the constructs of entrepreneurial mindset and entrepreneurial self-efficacy.

These findings are supported by studies of Bergek and Norrman (2008), and Hackett and Dilts (2004) which highlighted that business incubators provide support to new ventures with the intention that they will develop into sustainable ventures, and that their support entails several dimensions such as office space, shared resources, business support, and access to networks.

The findings that incubatees perceived a moderate impact between incubation and both their entrepreneurial mindset and entrepreneurial self-efficacy are supported by a number of studies. A study by Smith and Zhang (2012) found that business incubators provide more than facilities and support services, they provide an environment in which new ventures can learn and grow in relative safety, gradually accumulating the confidence and credibility required for successful and sustainable business. This study emphasised the development of confidence and credibility as important requirements for a sustainable venture.

Research by Carayannis and von Zedtwitz (2005), and Buys and Mbewana (2007) proposed that in developing economies incubators can assist by bringing their resources and business knowledge. The services include physical space programs aimed at the personal and professional development of the incubatees. Furthermore business incubators provide business counselling, coaching, and venture capital.

The study by Peters et al. (2004) proposed a model that explained the role of incubators in the entrepreneurial process (Depicted in Figure 2). Their model focused on the impact of the services offered by incubators such as infrastructure, coaching, and networks and the graduation rates of the respective incubators' tenants. Their study indicated that the services that distinguish the success of incubators relates primarily to the presence or absence of coaching and access to networks.

As mentioned above, these studies highlighted the importance of coaching, hands-on business counselling and networking as important ingredients of incubator success. The respondents indicated that incubation had the highest major impact on marshalling. The items that constitute marshalling on the scale are 8, 9, and 10 in APPENDIX A. Briefly:

- *Item 8:* Get others to identify with and believe in my vision and plan for a new business.
- *Item 9:* Network, make contact with and exchange information with others.
- *Item 10:* Clearly and concisely explain verbally/in writing my business idea in everyday terms.

These findings are in-line with the literature highlighted above indicating that incubators provide counselling, networking, coaching and business support as part of their services. These studies highlighted the importance of coaching, hands-on business counselling and networking as important ingredients of incubator success. Hands-on business support could potential assist in improving the incubatee's entrepreneurial self-efficacy.

5.7 Discussion pertaining to Proposition 4

Proposition 4 stated that incubatees who completed incubation perceived a higher positive relation between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program. The results of the Mann-Whitney test indicated that there was no significant difference between incubatees who had completed incubation and incubatees who were still in the program on their perceived impact of business incubation on the sub-construct of searching.

There was however, a significant difference between incubatees who completed incubation and incubatees who were still in the program on their perceived impact of business incubation for the sub-constructs of planning, marshalling, implementing people, and implementing financial. There was also a significant difference between incubatees who completed incubation and incubatees who

were still in the program on their perceived impact of business incubation on the main construct of entrepreneurial self-efficacy.

The findings of this research indicated that incubatees who completed incubation perceived a higher positive impact between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program. These findings find resonance with research by Zhao et al. (2005); this study found that entrepreneurial education resulted in high levels of entrepreneurial self-efficacy. McGee et al. (2009) found similar results that entrepreneurial education resulted in high levels of entrepreneurial activity.

The findings of this study where contradicted by the findings of a study by Cox et al. (2000), their study measured entrepreneurship self-efficacy before and after participation in an entrepreneurship course found a negative impact. The findings of the this study were confirmed in a study by Oosterbeek et al. (2010) that also found negative effects of entrepreneurship education on student's intentions to become entrepreneurs. Karlsson and Moberg (2013) and O'Connor (2013) concluded that these findings illustrate the need to study and evaluate the outcome of entrepreneurship education.

5.8 Conclusion

After reviewing the results pertaining to Propositions 1 to 4, it can be concluded that the findings of this study are in line with similar studies conducted previously although there was insufficient theory to support the formulation of hypothesis around the chosen area of study. This study has, to a large extent, been novel and original with limited prior research as evident from the calls by various researchers for more studies on the impact of business incubation on the individual entrepreneur.

Results pertaining to Propositions 1 and 3 indicated that incubatees perceived a moderate impact of incubation on their entrepreneurial mindset and entrepreneurial self-efficacy. This finding was further supported by the results pertaining to Propositions 2 and 4, which indicated that in all aspects the

incubatees who completed incubation perceived a significantly higher positive impact between incubation and both their entrepreneurial mindset and entrepreneurial self-efficacy than incubatees who were still in the program. These findings make it apparent that incubation has a positive impact on the individual entrepreneurs' mindset.

These results are supported by the works of Fielden and Hunt (2011), Johnson (2002), and Merriam and Mohamad (2000) who found that mentoring is an important aspect of learning, with mentors also providing hands on experiences (Lee, 2007). Incubators that participated in this research indicated a strong emphasis on providing mentoring to the incubatees.

Research by Deakins et al. (2008) and Sullivan (2000) found that mentoring and coaching provided to new ventures helps them to flourish. Mentoring builds the entrepreneurs' entrepreneurial self-efficacy (Wikholm, Henningson, and Hultman, 2005, cited in Lefebvre & Redien-Collot, 2013) and the entrepreneurs' entrepreneurial mindset (Kent, Dennis, & Tanton, 2003, cited in Lefebvre & Redien-Collot, 2013).

The following chapter provides overall conclusions of the study, it discusses implications of the study and make suggestions for future research based on the knowledge accumulated.

CHAPTER 6: CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

6.1 Introduction

The previous chapter discusses the findings of this study and provides a link with relevant literature. Based on the findings presented in this report, this chapter concludes this research and makes recommendation for future research to be undertaken.

6.2 Overview of literature

The literature reviewed for this study focused on three areas of enquiry namely, enterprise development, entrepreneurial mindset, and entrepreneurial self-efficacy. The literature review began by conceptualising the context of the study. The South African context is characterised by a dual economy system. On the one side, the 'first economy' is well developed with modern facilities, on the other side the 'second economy' is underdeveloped and plagued by poverty. Furthermore, the literature highlights the issues of unemployment and poverty. Unemployment and poverty impact the youth more that the adult population. This has led the youth to resort to entrepreneurship as a means for employment creation.

Government policy seeks to address the problem of unemployment and poverty by fostering economic development. To achieve economic development, the government, seeks to encourage a culture of entrepreneurship. This is achieved by promoting enterprise development. The literature advocates business incubators as the vehicle for implementing enterprise development. Business incubators are defined in the literature as organisations that provide a protected environment for start-ups to grow into successful ventures.

The literature discusses in detail the various archetypes of business incubators, their value proposition and the services they provide to the incubatees. There is debate among researchers as to the value of incubators to the incubatees, with some researchers arguing that the contribution of business incubators in the success of the incubatees is claimed mostly by its practitioners. However, there are a variety of studies undertaken that relates aspects of incubation such as coaching, mentoring and counselling to the rate of incubation graduation.

The literature also highlights that research on incubators tended to focus on the 'tangible' aspects of incubation and not the 'intangible' aspects. Furthermore, research on the impact of incubators tend to focus on the venture with little attention paid to the individual entrepreneur. The literature on entrepreneurial mindset suggests that entrepreneurs are part of a homogeneous group, the entrepreneurial mind has either gleaned or mastered aspects of the entrepreneurial mindset and the entrepreneurial mind could be 'trained'.

The literature established a linkage between the entrepreneurial mindset and entrepreneurial self-efficacy. Research suggests that an entrepreneur with a highly developed entrepreneurial mindset will also be high on entrepreneurial self-efficacy. Research has demonstrated that entrepreneurial self-efficacy is positively related to new venture growth, and that there is positive relation between entrepreneurial self-efficacy and new venture performance.

Four propositions emanated from the literature review as follows:

- *Proposition 1:* Incubatees perceived a positive impact between incubation and their entrepreneurial mindset.

- *Proposition 2:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.

- *Proposition 3:* Incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy.

- *Proposition 4:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

6.3 Summary of results

The results of this research were compared and contrasted with relevant academic literature. The results were found to be mostly supported by literature. Broadly the results for each proposition were:

- *Proposition 1:* Incubatees perceived a moderate impact of business incubation on their entrepreneurial mindset.
- *Proposition 2:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial mindset than incubatees who were still in the program.
- *Proposition 3:* Incubatees perceived a positive impact between incubation and their entrepreneurial self-efficacy.
- *Proposition 4:* Incubatees who completed incubation perceived a higher impact between incubation and their entrepreneurial self-efficacy than incubatees who were still in the program.

6.4 Implications

The research on the intangible aspects of business incubation is underdeveloped. There is still much to build on in this field of research. Practitioners need to focus on the aspects of the constructs that were identified as no impact, minor impact and neutral as perceived by incubatees. While the findings of this study are useful, it is recommended that academics conduct a much more in-depth longitudinal study on this topic to confirm these results.

6.5 Limitations

The study had several limitations identified. Time constraint limitations influenced the type of study undertaken. Ideally, a longitudinal study would have been appropriate for this research, as the research seeks to measure changes in behaviour. However, due to time limitations, a cross sectional study representing "a snapshot at a point in time" (Cooper & Schindler, 2011, p. 149) was undertaken.

Sampling limitations were also experienced. The researcher experienced challenges in gaining access to the target population of the study. This was as a result of many factors, however what is considered most concerning is the apparent disorganisation prevalent in the incubation industry.

Piloting limitation, while a small pilot study was undertaken, the pilot study was done using Wits Business School MMENVC students and not a sample of the target population. Feedback from the pilot was used to amend the instrument wording items.

6.6 Recommendations for future research

Several limitations in this study could provide opportunities for future research. The study was conducted on a limited sample size using a purposive sample. This could therefore lead to doubt on the validity of the results and the ability to generalise the conclusions. Future studies could include a larger and more representative sample in order to validate or disprove the findings of this study.

The majority of incubation organisations were not willing to assist in this study, those that participated requested to remain anonymous. This then made it impossible to determine if the sample covered the various types of incubators, and to ascertain the types of services provided by the incubators. It was established in the literature review that there are various forms of incubators offering a variety of services. Future research could examine the effectiveness of the various incubation models.

The informal economy, contrary to the views of government, contributes to GDP and is a major contributor to job creation. However, there is limited business training and enterprise support for this sector. Future research could look into designing incubation programs that address the challenges of entrepreneurs operating in this space.

This reports explored an area or study that is currently underdeveloped, therefore it is conducive to theory building and it should be used for such and as a baseline to draw upon for future research in this field of study.

6.7 Conclusions

The study explored an area of research that was underexplored. This unfortunately prohibited the formulation of robust hypothesis. That being said, some interesting propositions were formulated based on the limited academic literature available. The results of the study, while they indicate that there is mostly moderate impact as perceived by the incubatees, lend support to previous research that claimed that incubation had a positive impact on venture growth.

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APPENDIX A

Research Instrument

Dear participant

I am a Master of Management in Entrepreneurship and New Venture Creation student at Wits Business School. For academic requirements, I am conducting a survey of the perceptions of entrepreneurs regarding the role of business incubation. As the survey takes only about 5-10 minutes to complete, I would be most grateful for your participation.

The survey is anonymous and participation is voluntary, so you may withdraw at any stage. If you would like to receive the results of the survey, you can send an e-mail to lukhanyo.tilana@airports.co.za and I will forward the results to you within the next two months.

I thank you in advance for your participation in the study.

Lukhanyo Tilana

Please answer the following question based on the scale provided below:

Do you percieve the business incubation process to have had a positive effect on your ability to?

No effect = 1 Minor effect = 2 Nuetral = 3 Moderate effect = 4 Major effect = 5

1. Brainstorm (come up with) a new idea for a product or service	1	2	3	4	5
2. Identify the need for a new product or service	1	2	3	4	5
3. Design a product or service that will satisfy customer needs and wants	1	2	3	4	5
4. Estimate customer demand for a new product or service	1	2	3	4	5

5. Determine a competitive price for a new product or service	1	2	3	4	5
6. Estimate the amount of start-up funds and working capital necessary to start my business	1	2	3	4	5
7. Design an effective marketing/ advertising campaign for a new product or service	1	2	3	4	5
8. Get others to identify with and believe in my vision and plan for a new business	1	2	3	4	5
9. Network-make contact with and exchange information with others	1	2	3	4	5
10. Clearly and concisely explain verbally/in writing my business idea in everyday terms	1	2	3	4	5
11. Supervise employees	1	2	3	4	5
12. Recruit and hire employees	1	2	3	4	5
13. Delegate tasks and responsibilities to employees in my business	1	2	3	4	5
14. Deal effectively with day-to-day problems and crises	1	2	3	4	5
15. Inspire, encourage, and motivate my employees	1	2	3	4	5
16. Train employees	1	2	3	4	5
17. Organise and maintain the financial records of my business	1	2	3	4	5
18. Manage the financial assets of my business	1	2	3	4	5

19. Read and interpret financial statements	1	2	3	4	5
20. Define goals for myself	1	2	3	4	5
21. Understand how accomplishment of a task relates to my goals	1	2	3	4	5
22. Set specific goals before I begin a task	1	2	3	4	5
23. Ask myself how well I've accomplished my goals once I've finished	1	2	3	4	5
24. When performing a task, frequently assess my progress against my objectives	1	2	3	4	5
25. Think of several ways to solve a problem and choose the best one	1	2	3	4	5
26. Challenge my own assumptions about a task before I begin	1	2	3	4	5
27. Think about how others my react to my actions	1	2	3	4	5
28. Automatically employ strategies that have worked in the past	1	2	3	4	5
29. Perform best when I already have knowledge of the task	1	2	3	4	5
30. Create my own examples to make information more meaningful	1	2	3	4	5
31. Try to use strategies that have worked in the past	1	2	3	4	5
32. Ask myself questions about the task before I begin	1	2	3	4	5

33. Try to translate new information into my own words	1	2	3	4	5
34. Try to break problems down into smaller components	1	2	3	4	5
35. Focus on the meaning and significance of new information	1	2	3	4	5
36. Think about what I really need to accomplish before I begin a task	1	2	3	4	5
37. Use different strategies depending on the situation	1	2	3	4	5
38. Organise my time to best accomplish my goals	1	2	3	4	5
39. Organise information	1	2	3	4	5
40. Know what kind of information is most important to consider when faced with a problem	1	2	3	4	5
41. Conscioulsy focus my attention on important information	1	2	3	4	5
42. My "gut" tells me when a given strategy I use will be most effective	1	2	3	4	5
43. Depend on my intuition to help me formulate strategies	1	2	3	4	5
44. Ask myself if I have considered all the options when solving a problem	1	2	3	4	5
45. Ask myself if there was an easier way to do things after I finish a task	1	2	3	4	5
46. Ask myself if I have considered all the options after I solve a problem	1	2	3	4	5

47. Re-evaluate my assumptions when I get confused	1	2	3	4	5
48. Ask myself if I have learned as much as I could have when I finished the task	1	2	3	4	5
49. Periodically review to help me understand important relationships	1	2	3	4	5
50. Stop and go back over information that is not clear	1	2	3	4	5
51. Aware of what strategies I use when engaged in a given task	1	2	3	4	5
52. Find myself analysing the usefulness of a given strategy while engaged in a given task	1	2	3	4	5
53. Find myself pausing regularly to check my comprehension of the problem or situation at hand	1	2	3	4	5
54. Ask myself questions about how well I am doing while I am performing a novel task	1	2	3	4	5
55. Stop and reread when I get confused	1	2	3	4	5

General Information

Please give some information about yourself for statistical purposes.

56. Gender	Male ☐	Female ☐
57. Age group	18-24	☐
	25-35	☐
	36-44	☐
	45-54	☐
	55 and over	☐
58. What ethnic group do you consider yourself to belong to?	Black	☐
	White	☐
	Coulored	☐
	Indian	☐
	Other	☐

59. What level of education did you reach?	Less than high school ☐ High school graduate ☐ Post high school certificate ☐ Diploma ☐ Bachelor degree ☐ Graduate Diploma ☐ Post grad degree ☐
60. Have you ever been in an incubation program?	Yes ☐ No ☐
61. Did you complete the program successfully?	Yes ☐ No ☐

APPENDIX B

Frequency distributions for data cleaning

Question 1				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
No effect	10	11.5	11.5	11.5
Minor effect	4	4.6	4.6	16.1
Neutral	13	14.9	14.9	31.0
Moderate effect	24	27.6	27.6	58.6
Major effect	36	41.4	41.4	100.0
Total	87	100.0	100.0	
Question 2				
No effect	8	9.2	9.3	9.3
Minor effect	3	3.4	3.5	12.8
Neutral	12	13.8	14.0	26.7
Moderate effect	30	34.5	34.9	61.6
Major effect	33	37.9	38.4	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 3				
No effect	8	9.2	9.3	9.3
Minor effect	7	8.0	8.1	17.4
Neutral	14	16.1	16.3	33.7
Moderate effect	23	26.4	26.7	60.5
Major effect	34	39.1	39.5	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 4				
No effect	8	9.2	9.3	9.3
Minor effect	8	9.2	9.3	18.6
Neutral	13	14.9	15.1	33.7
Moderate effect	33	37.9	38.4	72.1
Major effect	24	27.6	27.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		

Total	87	100.0		
Question 5				
No effect	10	11.5	11.6	11.6
Minor effect	8	9.2	9.3	20.9
Neutral	16	18.4	18.6	39.5
Moderate effect	29	33.3	33.7	73.3
Major effect	23	26.4	26.7	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 6				
No effect	11	12.6	12.9	12.9
Minor effect	11	12.6	12.9	25.9
Neutral	11	12.6	12.9	38.8
Moderate effect	23	26.4	27.1	65.9
Major effect	29	33.3	34.1	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 7				
No effect	9	10.3	10.3	10.3
Minor effect	8	9.2	9.2	19.5
Neutral	14	16.1	16.1	35.6
Moderate effect	31	35.6	35.6	71.3
Major effect	25	28.7	28.7	100.0
Total	87	100.0	100.0	
Question 8				
No effect	8	9.2	9.3	9.3
Minor effect	4	4.6	4.7	14.0
Neutral	14	16.1	16.3	30.2
Moderate effect	27	31.0	31.4	61.6
Major effect	33	37.9	38.4	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 9				
No effect	5	5.7	5.7	5.7
Minor effect	5	5.7	5.7	11.5
Neutral	10	11.5	11.5	23.0
Moderate effect	25	28.7	28.7	51.7
Major effect	42	48.3	48.3	100.0
Total	87	100.0	100.0	

Question 10				
No effect	8	9.2	9.4	9.4
Minor effect	3	3.4	3.5	12.9
Neutral	19	21.8	22.4	35.3
Moderate effect	21	24.1	24.7	60.0
Major effect	34	39.1	40.0	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 11				
No effect	10	11.5	11.6	11.6
Minor effect	7	8.0	8.1	19.8
Neutral	25	28.7	29.1	48.8
Moderate effect	27	31.0	31.4	80.2
Major effect	17	19.5	19.8	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 12				
No effect	10	11.5	11.8	11.8
Minor effect	9	10.3	10.6	22.4
Neutral	26	29.9	30.6	52.9
Moderate effect	21	24.1	24.7	77.6
Major effect	19	21.8	22.4	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 13				
No effect	10	11.5	11.6	11.6
Minor effect	7	8.0	8.1	19.8
Neutral	18	20.7	20.9	40.7
Moderate effect	32	36.8	37.2	77.9
Major effect	19	21.8	22.1	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 14				
No effect	10	11.5	11.6	11.6
Minor effect	9	10.3	10.5	22.1
Neutral	18	20.7	20.9	43.0
Moderate effect	25	28.7	29.1	72.1
Major effect	24	27.6	27.9	100.0

Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 15				
No effect	10	11.5	11.6	11.6
Minor effect	6	6.9	7.0	18.6
Neutral	13	14.9	15.1	33.7
Moderate effect	33	37.9	38.4	72.1
Major effect	24	27.6	27.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 16				
No effect	12	13.8	14.0	14.0
Minor effect	7	8.0	8.1	22.1
Neutral	24	27.6	27.9	50.0
Moderate effect	23	26.4	26.7	76.7
Major effect	20	23.0	23.3	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 17				
No effect	8	9.2	9.4	9.4
Minor effect	7	8.0	8.2	17.6
Neutral	14	16.1	16.5	34.1
Moderate effect	20	23.0	23.5	57.6
Major effect	36	41.4	42.4	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 18				
No effect	9	10.3	10.3	10.3
Minor effect	8	9.2	9.2	19.5
Neutral	19	21.8	21.8	41.4
Moderate effect	20	23.0	23.0	64.4
Major effect	31	35.6	35.6	100.0
Total	87	100.0	100.0	
Question 19				
No effect	13	14.9	14.9	14.9
Minor effect	9	10.3	10.3	25.3
Neutral	15	17.2	17.2	42.5
Moderate effect	21	24.1	24.1	66.7

Major effect	29	33.3	33.3	100.0
Total	87	100.0	100.0	
Question 20				
No effect	9	10.3	10.3	10.3
Minor effect	7	8.0	8.0	18.4
Neutral	13	14.9	14.9	33.3
Moderate effect	25	28.7	28.7	62.1
Major effect	33	37.9	37.9	100.0
Total	87	100.0	100.0	
Question 21				
No effect	9	10.3	10.3	10.3
Minor effect	3	3.4	3.4	13.8
Neutral	14	16.1	16.1	29.9
Moderate effect	24	27.6	27.6	57.5
Major effect	37	42.5	42.5	100.0
Total	87	100.0	100.0	
Question 22				
No effect	10	11.5	11.8	11.8
Minor effect	4	4.6	4.7	16.5
Neutral	19	21.8	22.4	38.8
Moderate effect	22	25.3	25.9	64.7
Major effect	30	34.5	35.3	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 23				
No effect	10	11.5	11.6	11.6
Minor effect	7	8.0	8.1	19.8
Neutral	13	14.9	15.1	34.9
Moderate effect	32	36.8	37.2	72.1
Major effect	24	27.6	27.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 24				
No effect	8	9.2	9.4	9.4
Minor effect	8	9.2	9.4	18.8
Neutral	16	18.4	18.8	37.6
Moderate effect	31	35.6	36.5	74.1
Major effect	22	25.3	25.9	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		

Total	87	100.0		
Question 25				
No effect	9	10.3	10.5	10.5
Minor effect	2	2.3	2.3	12.8
Neutral	16	18.4	18.6	31.4
Moderate effect	25	28.7	29.1	60.5
Major effect	34	39.1	39.5	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 26				
No effect	9	10.3	10.5	10.5
Minor effect	9	10.3	10.5	20.9
Neutral	16	18.4	18.6	39.5
Moderate effect	22	25.3	25.6	65.1
Major effect	30	34.5	34.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 27				
No effect	8	9.2	9.3	9.3
Minor effect	5	5.7	5.8	15.1
Neutral	22	25.3	25.6	40.7
Moderate effect	27	31.0	31.4	72.1
Major effect	24	27.6	27.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 28				
No effect	11	12.6	12.8	12.8
Minor effect	9	10.3	10.5	23.3
Neutral	16	18.4	18.6	41.9
Moderate effect	28	32.2	32.6	74.4
Major effect	22	25.3	25.6	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 29				
No effect	10	11.5	11.6	11.6
Minor effect	5	5.7	5.8	17.4
Neutral	13	14.9	15.1	32.6
Moderate effect	28	32.2	32.6	65.1

Major effect	30	34.5	34.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 30				
No effect	10	11.5	12.0	12.0
Minor effect	7	8.0	8.4	20.5
Neutral	12	13.8	14.5	34.9
Moderate effect	30	34.5	36.1	71.1
Major effect	24	27.6	28.9	100.0
Total	83	95.4	100.0	
Missing System	4	4.6		
Total	87	100.0		
Question 31				
No effect	10	11.5	11.9	11.9
Minor effect	4	4.6	4.8	16.7
Neutral	12	13.8	14.3	31.0
Moderate effect	34	39.1	40.5	71.4
Major effect	24	27.6	28.6	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		
Question 32				
No effect	10	11.5	11.6	11.6
Minor effect	7	8.0	8.1	19.8
Neutral	19	21.8	22.1	41.9
Moderate effect	26	29.9	30.2	72.1
Major effect	24	27.6	27.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 33				
No effect	9	10.3	10.7	10.7
Minor effect	10	11.5	11.9	22.6
Neutral	12	13.8	14.3	36.9
Moderate effect	34	39.1	40.5	77.4
Major effect	19	21.8	22.6	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		
Question 34				
No effect	10	11.5	11.9	11.9

Minor effect	5	5.7	6.0	17.9
Neutral	17	19.5	20.2	38.1
Moderate effect	27	31.0	32.1	70.2
Major effect	25	28.7	29.8	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		
Question 35				
No effect	11	12.6	12.9	12.9
Minor effect	5	5.7	5.9	18.8
Neutral	10	11.5	11.8	30.6
Moderate effect	32	36.8	37.6	68.2
Major effect	27	31.0	31.8	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 36				
No effect	9	10.3	10.6	10.6
Minor effect	4	4.6	4.7	15.3
Neutral	14	16.1	16.5	31.8
Moderate effect	26	29.9	30.6	62.4
Major effect	32	36.8	37.6	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 37				
No effect	8	9.2	9.3	9.3
Minor effect	5	5.7	5.8	15.1
Neutral	13	14.9	15.1	30.2
Moderate effect	28	32.2	32.6	62.8
Major effect	32	36.8	37.2	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 38				
No effect	10	11.5	11.8	11.8
Minor effect	1	1.1	1.2	12.9
Neutral	15	17.2	17.6	30.6
Moderate effect	30	34.5	35.3	65.9
Major effect	29	33.3	34.1	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		

Total	87	100.0		
Question 39				
No effect	10	11.5	11.8	11.8
Minor effect	4	4.6	4.7	16.5
Neutral	15	17.2	17.6	34.1
Moderate effect	27	31.0	31.8	65.9
Major effect	29	33.3	34.1	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 40				
No effect	10	11.5	11.6	11.6
Minor effect	2	2.3	2.3	14.0
Neutral	13	14.9	15.1	29.1
Moderate effect	31	35.6	36.0	65.1
Major effect	30	34.5	34.9	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 41				
No effect	10	11.5	11.8	11.8
Minor effect	2	2.3	2.4	14.1
Neutral	13	14.9	15.3	29.4
Moderate effect	31	35.6	36.5	65.9
Major effect	29	33.3	34.1	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 42				
No effect	9	10.3	10.6	10.6
Minor effect	9	10.3	10.6	21.2
Neutral	21	24.1	24.7	45.9
Moderate effect	20	23.0	23.5	69.4
Major effect	26	29.9	30.6	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 43				
No effect	12	13.8	14.0	14.0
Minor effect	9	10.3	10.5	24.4
Neutral	19	21.8	22.1	46.5
Moderate effect	32	36.8	37.2	83.7

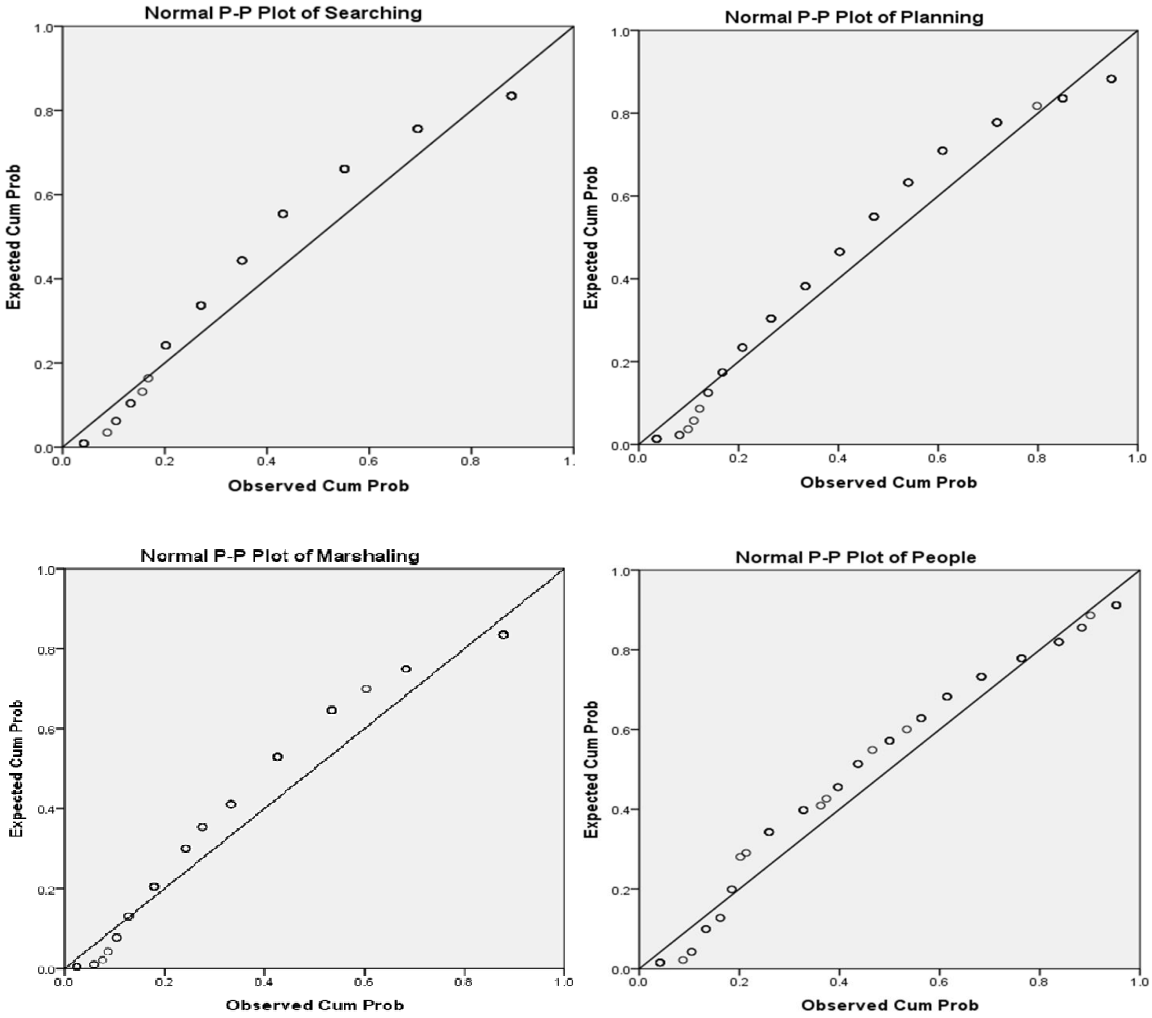
Major effect	14	16.1	16.3	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 44				
No effect	10	11.5	11.8	11.8
Minor effect	3	3.4	3.5	15.3
Neutral	12	13.8	14.1	29.4
Moderate effect	33	37.9	38.8	68.2
Major effect	27	31.0	31.8	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 45				
No effect	11	12.6	13.3	13.3
Minor effect	5	5.7	6.0	19.3
Neutral	15	17.2	18.1	37.3
Moderate effect	33	37.9	39.8	77.1
Major effect	19	21.8	22.9	100.0
Total	83	95.4	100.0	
Missing System	4	4.6		
Total	87	100.0		
Question 46				
No effect	10	11.5	11.6	11.6
Minor effect	6	6.9	7.0	18.6
Neutral	18	20.7	20.9	39.5
Moderate effect	25	28.7	29.1	68.6
Major effect	27	31.0	31.4	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 47				
No effect	10	11.5	11.9	11.9
Minor effect	5	5.7	6.0	17.9
Neutral	14	16.1	16.7	34.5
Moderate effect	31	35.6	36.9	71.4
Major effect	24	27.6	28.6	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		
Question 48				
No effect	10	11.5	12.0	12.0

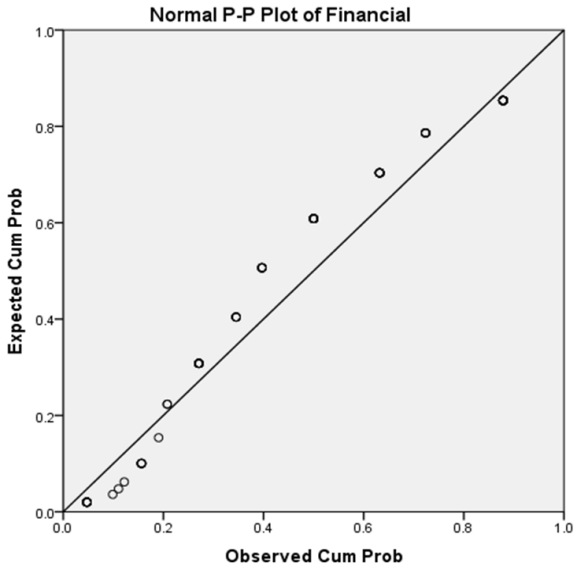
Minor effect	5	5.7	6.0	18.1
Neutral	14	16.1	16.9	34.9
Moderate effect	33	37.9	39.8	74.7
Major effect	21	24.1	25.3	100.0
Total	83	95.4	100.0	
Missing System	4	4.6		
Total	87	100.0		
Question 49				
No effect	8	9.2	9.3	9.3
Minor effect	6	6.9	7.0	16.3
Neutral	13	14.9	15.1	31.4
Moderate effect	30	34.5	34.9	66.3
Major effect	29	33.3	33.7	100.0
Total	86	98.9	100.0	
Missing System	1	1.1		
Total	87	100.0		
Question 50				
No effect	10	11.5	11.8	11.8
Minor effect	6	6.9	7.1	18.8
Neutral	13	14.9	15.3	34.1
Moderate effect	26	29.9	30.6	64.7
Major effect	30	34.5	35.3	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 51				
No effect	11	12.6	12.9	12.9
Minor effect	4	4.6	4.7	17.6
Neutral	20	23.0	23.5	41.2
Moderate effect	29	33.3	34.1	75.3
Major effect	21	24.1	24.7	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 52				
No effect	10	11.5	12.0	12.0
Minor effect	4	4.6	4.8	16.9
Neutral	13	14.9	15.7	32.5
Moderate effect	33	37.9	39.8	72.3
Major effect	23	26.4	27.7	100.0
Total	83	95.4	100.0	
Missing System	4	4.6		

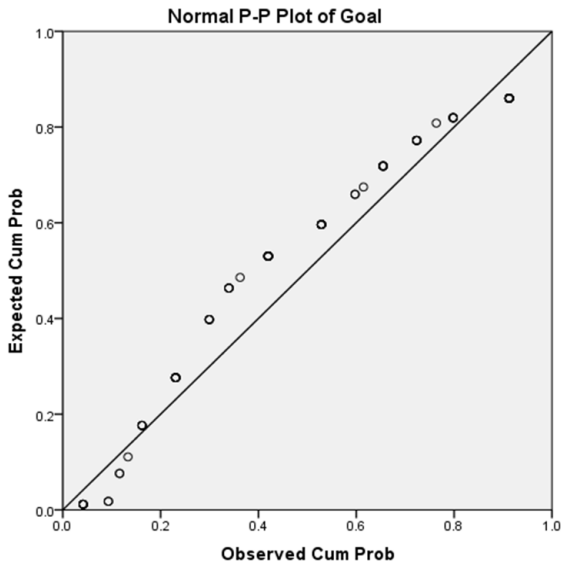
Total	87	100.0		
Question 53				
No effect	10	11.5	11.8	11.8
Minor effect	5	5.7	5.9	17.6
Neutral	17	19.5	20.0	37.6
Moderate effect	28	32.2	32.9	70.6
Major effect	25	28.7	29.4	100.0
Total	85	97.7	100.0	
Missing System	2	2.3		
Total	87	100.0		
Question 54				
No effect	10	11.5	11.9	11.9
Minor effect	7	8.0	8.3	20.2
Neutral	18	20.7	21.4	41.7
Moderate effect	24	27.6	28.6	70.2
Major effect	25	28.7	29.8	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		
Question 55				
No effect	9	10.3	10.7	10.7
Minor effect	5	5.7	6.0	16.7
Neutral	17	19.5	20.2	36.9
Moderate effect	21	24.1	25.0	61.9
Major effect	32	36.8	38.1	100.0
Total	84	96.6	100.0	
Missing System	3	3.4		
Total	87	100.0		

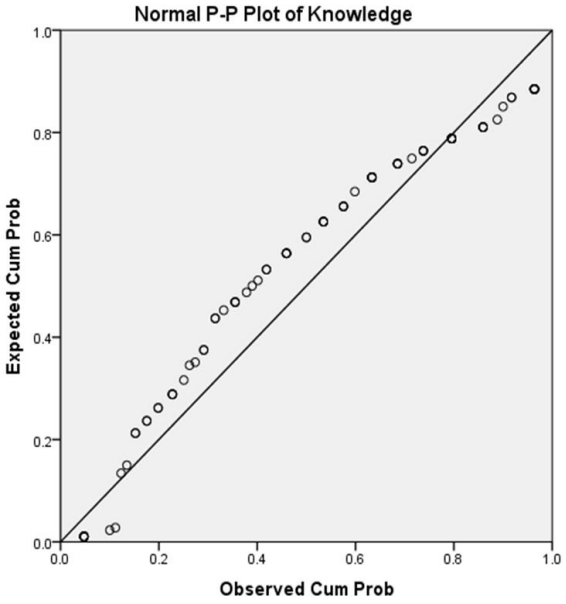
APPENDIX C

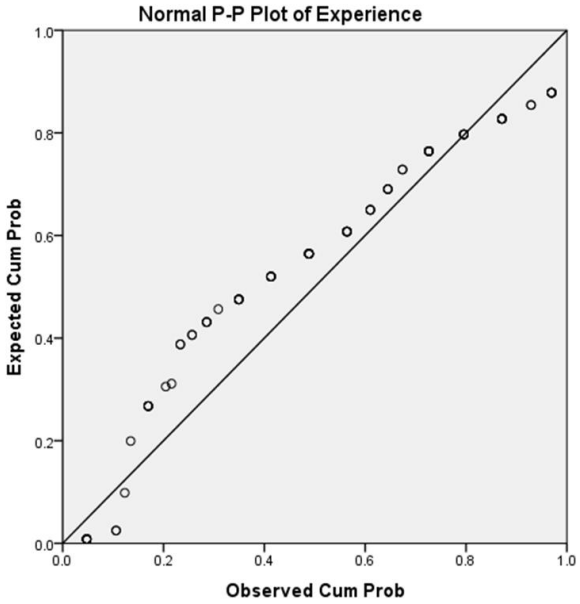
Normality tests: P-P Plots

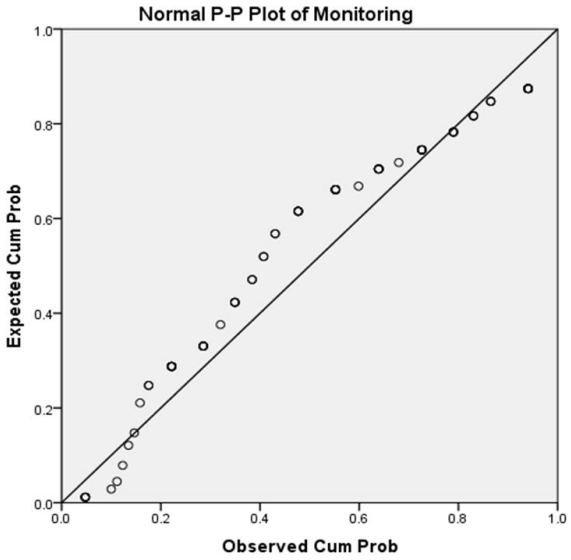


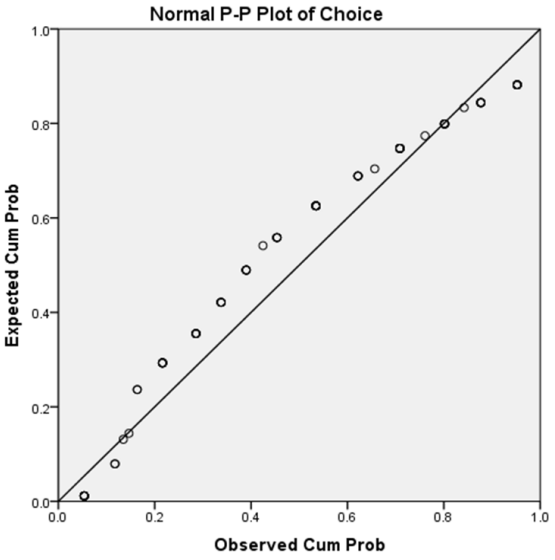

Normal P-P Plot of Financial
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

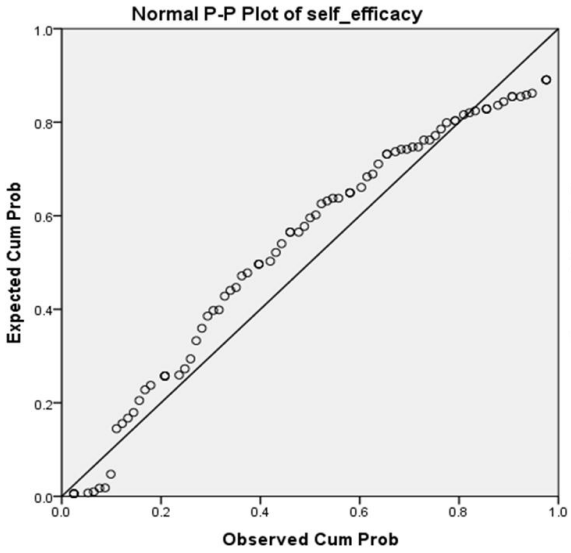

Normal P-P Plot of Goal
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

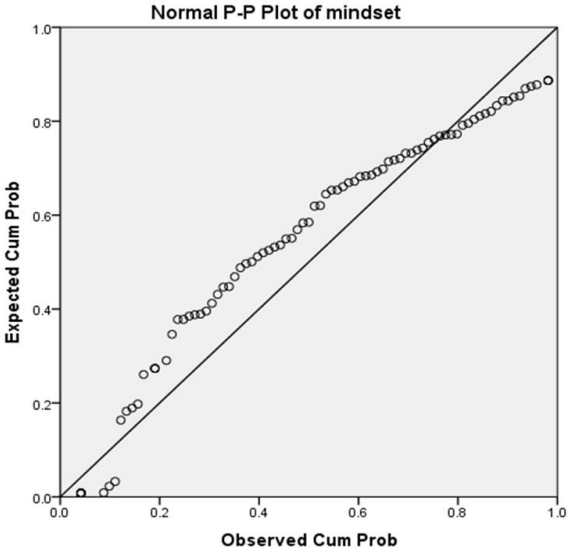

Normal P-P Plot of Knowledge
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Experience
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Normal P-P Plot of Monitoring
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

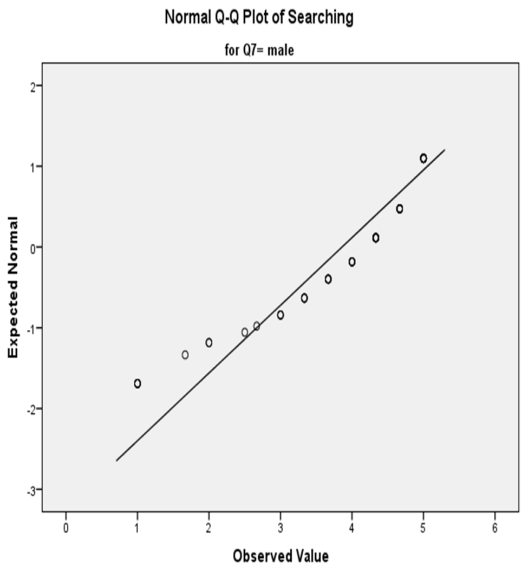

Normal P-P Plot of Choice
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

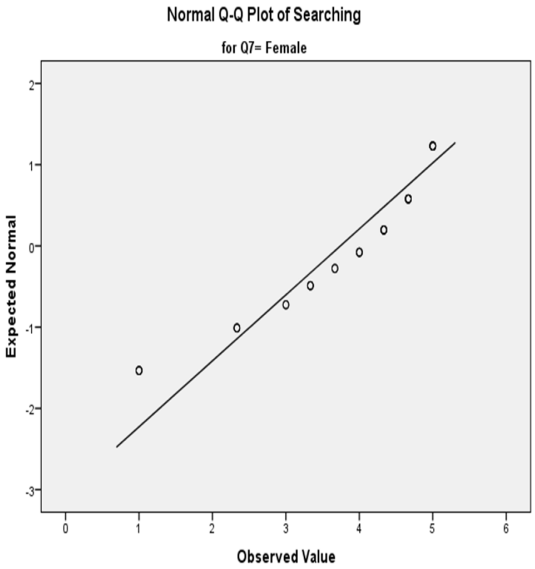

Normal P-P Plot of self_efficacy
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

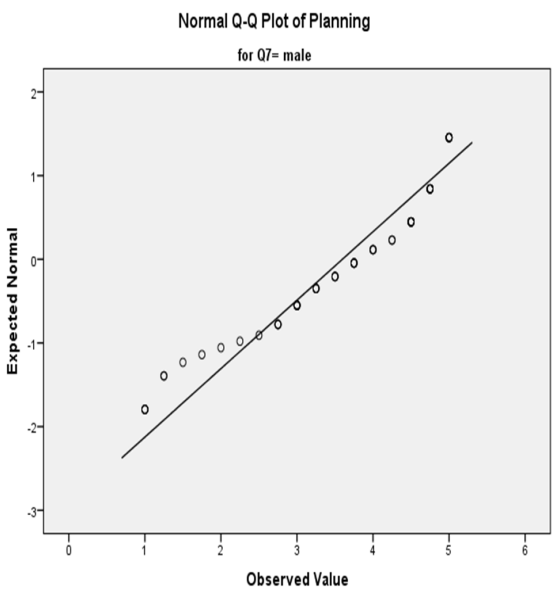

Normal P-P Plot of mindset
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

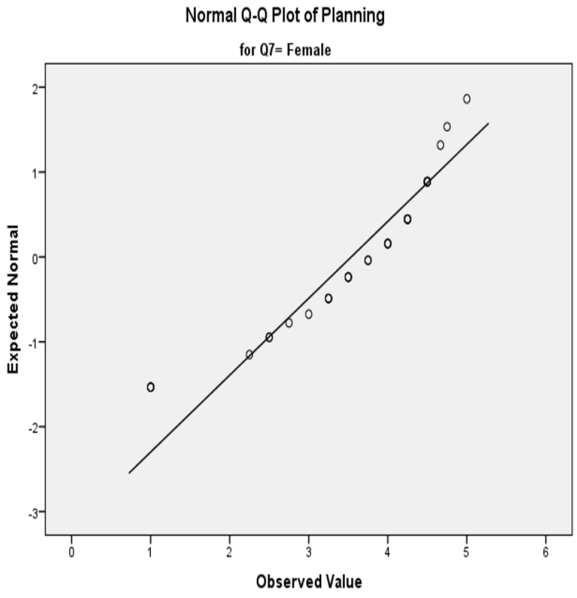
APPENDIX D

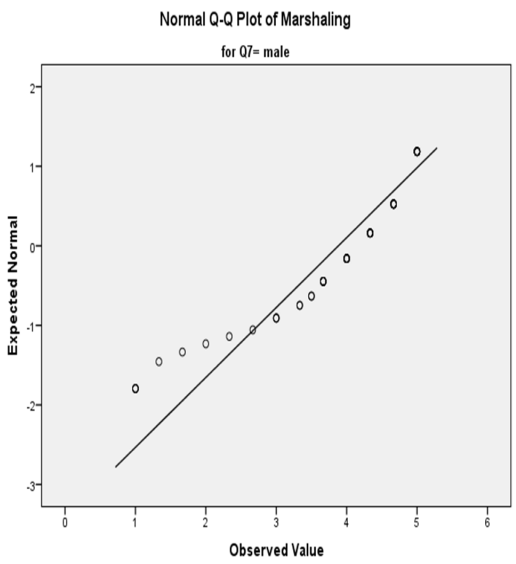
Normality test: Q-Q Plots

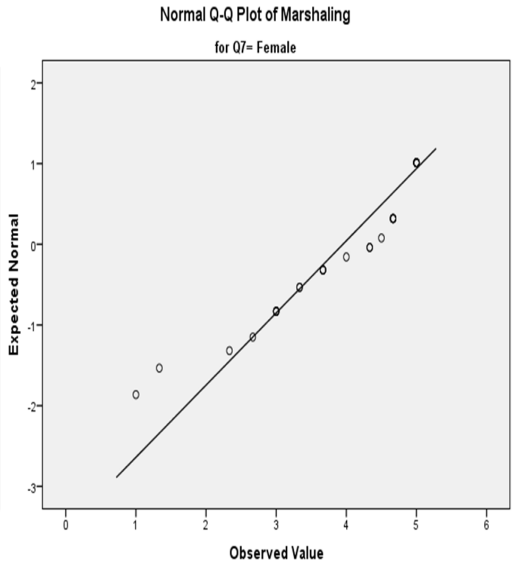


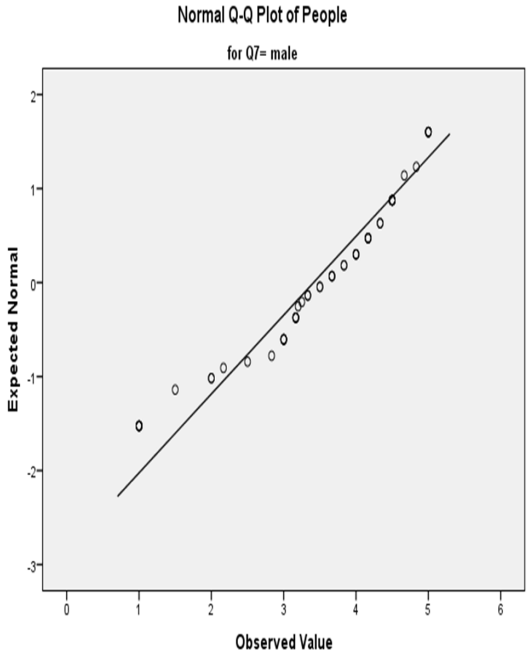


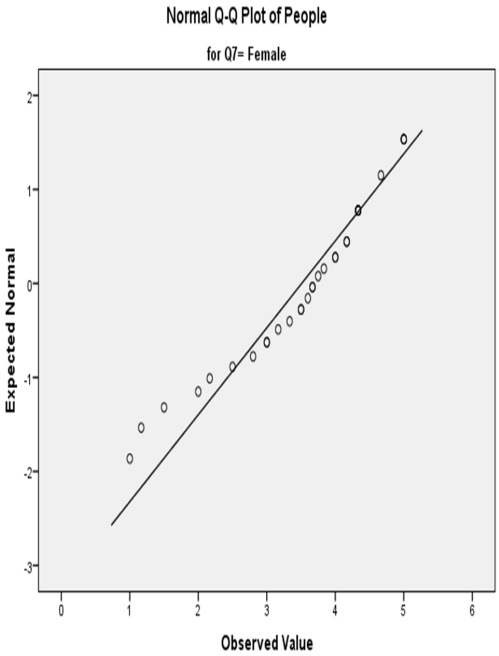


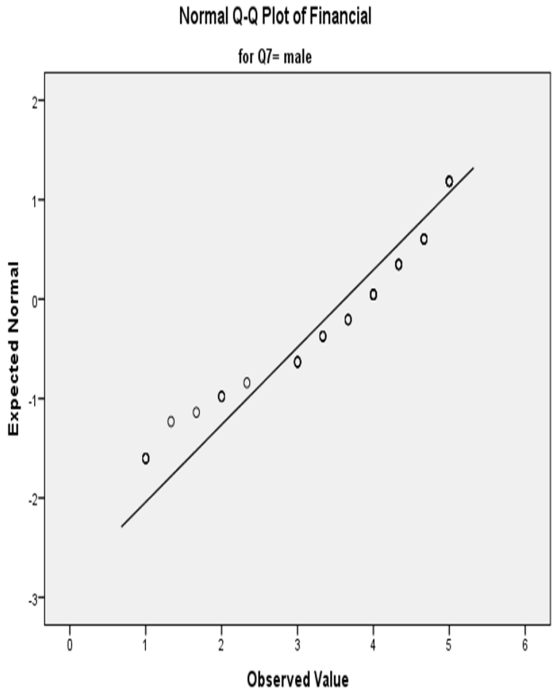


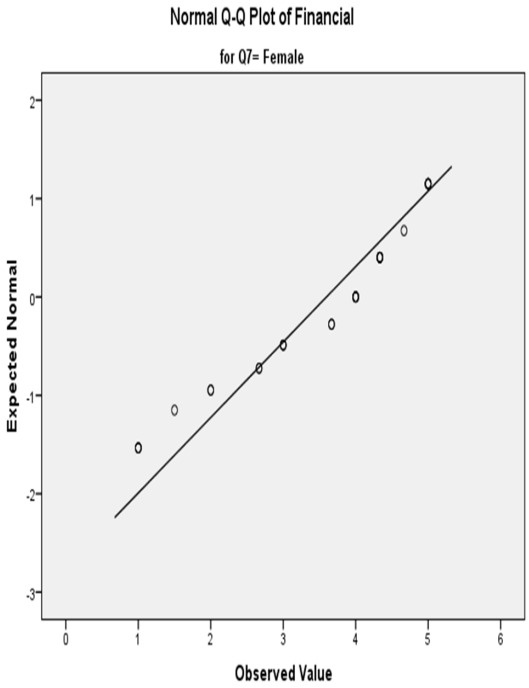

Normal Q-Q Plot of Marshaling
for Q7= male
Expected Normal
Observed Value

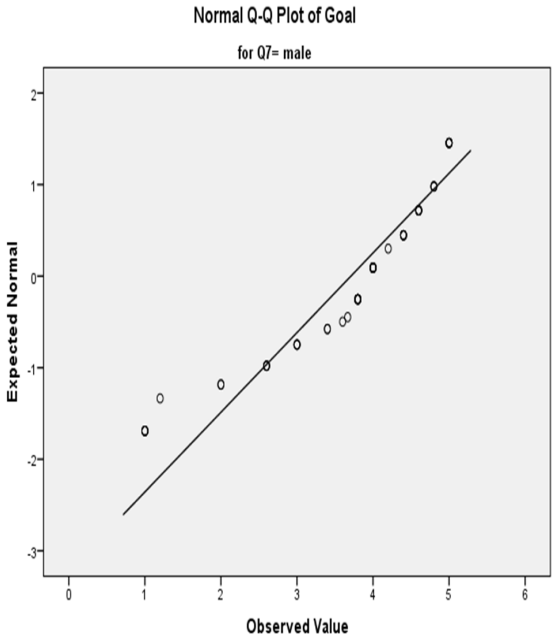

Normal Q-Q Plot of Marshaling
for Q7= Female
Expected Normal
Observed Value

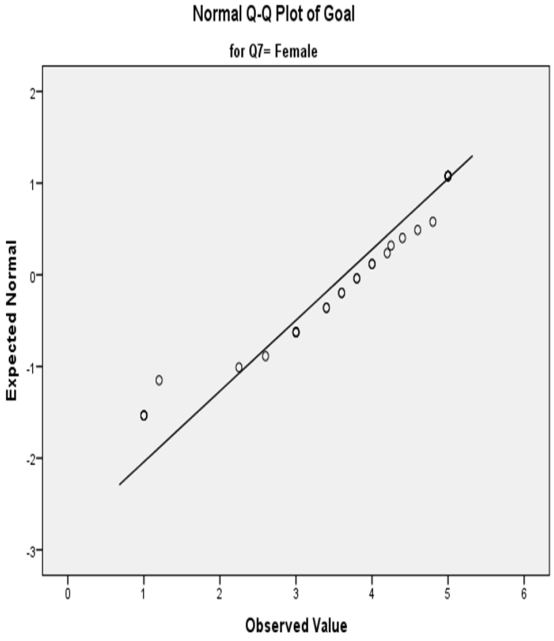

Normal Q-Q Plot of People
for Q7= male
Expected Normal
Observed Value

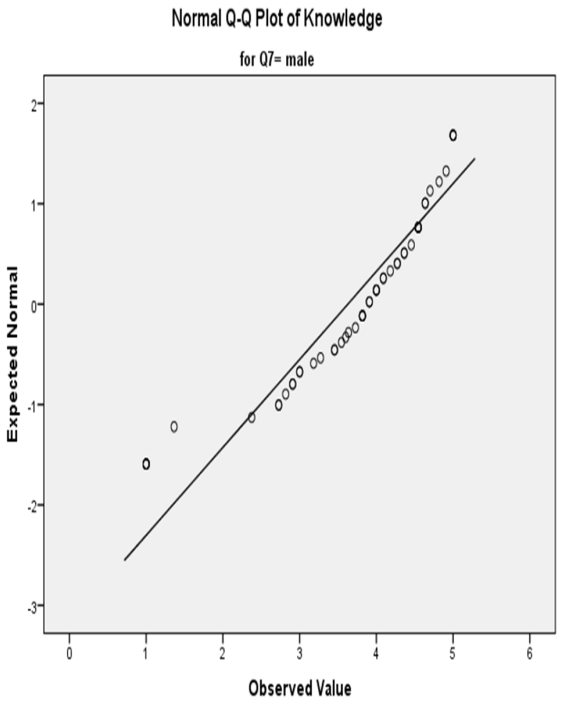

Normal Q-Q Plot of People
for Q7= Female
Expected Normal
Observed Value

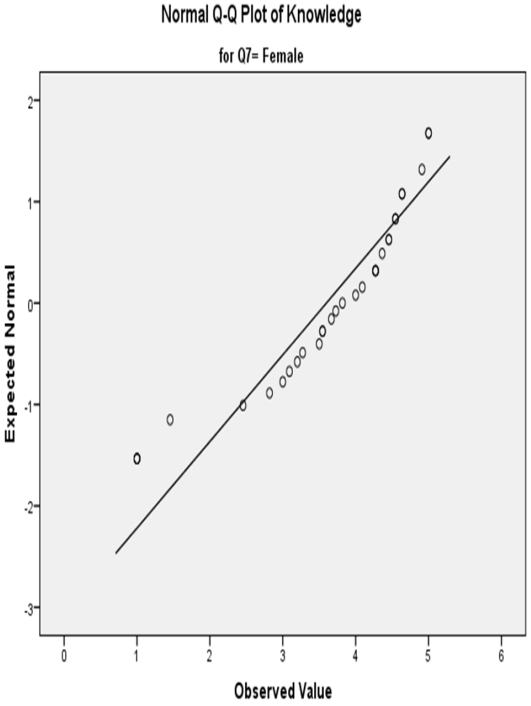

Normal Q-Q Plot of Financial
for Q7= male
Expected Normal
Observed Value

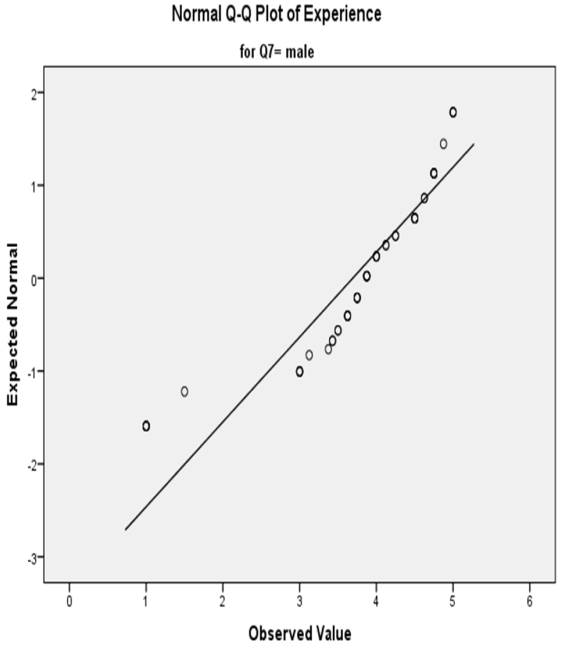

Normal Q-Q Plot of Financial
for Q7= Female
Expected Normal
Observed Value

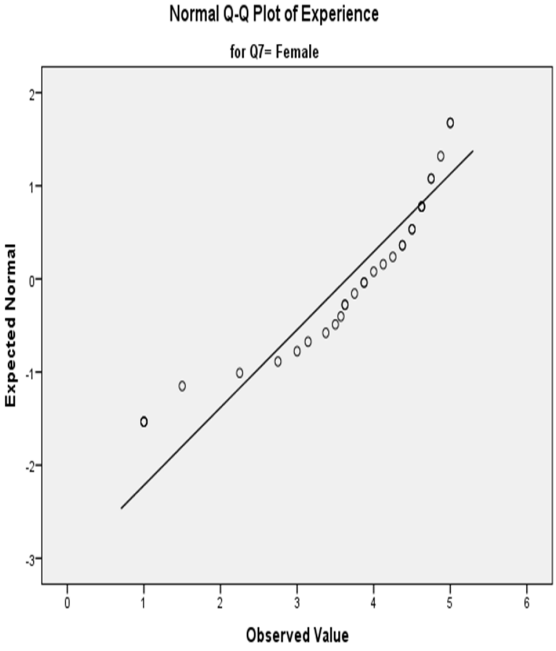

Normal Q-Q Plot of Goal
for Q7= male
Expected Normal
Observed Value

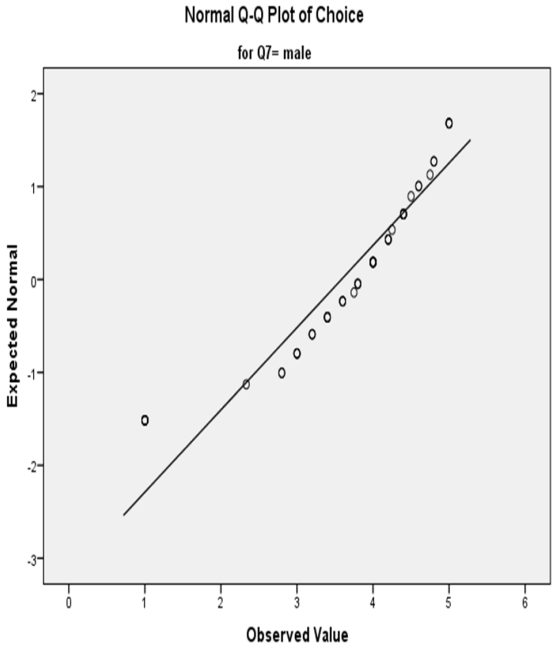

Normal Q-Q Plot of Goal
for Q7= Female
Expected Normal
Observed Value

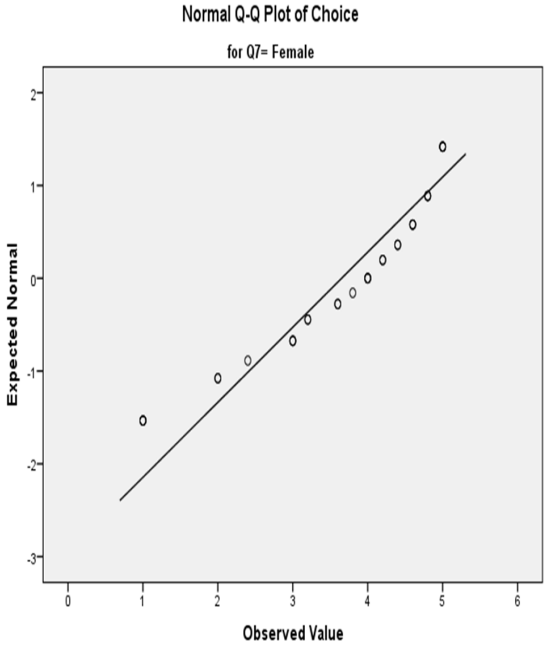

Normal Q-Q Plot of Knowledge
for Q7= male
Expected Normal
Observed Value

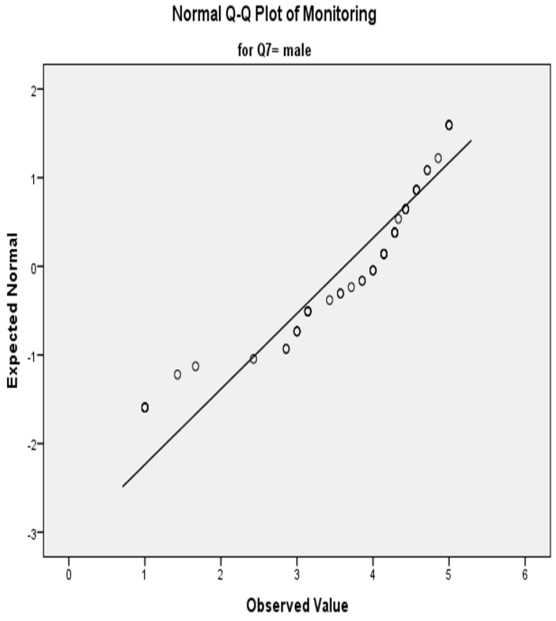

Normal Q-Q Plot of Knowledge
for Q7= Female
Expected Normal
Observed Value

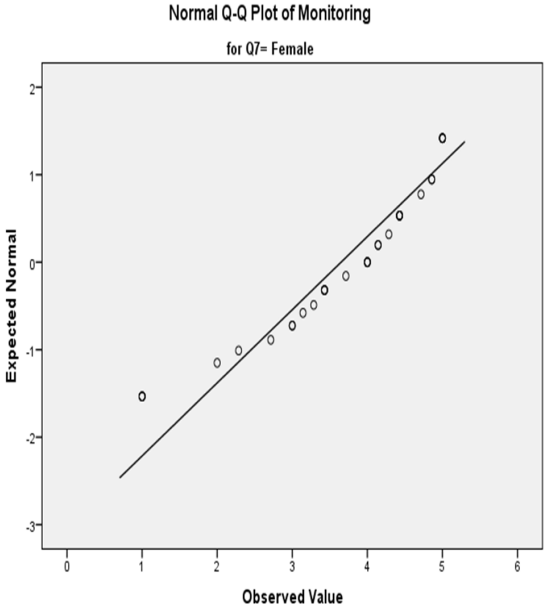

Normal Q-Q Plot of Experience
for Q7= male
Expected Normal
Observed Value

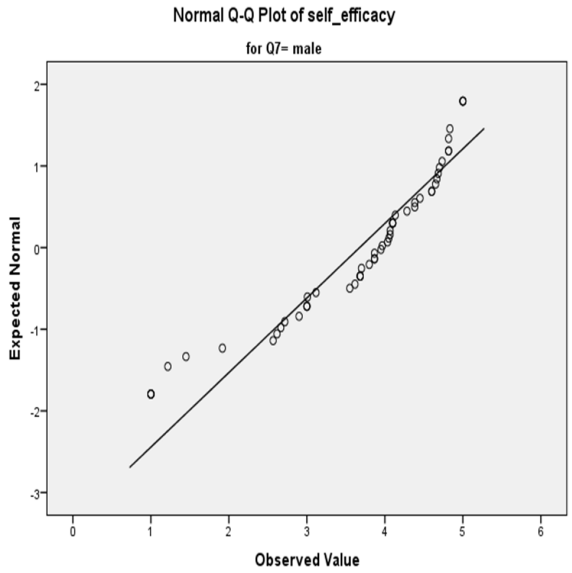

Normal Q-Q Plot of Experience
for Q7= Female
Expected Normal
Observed Value

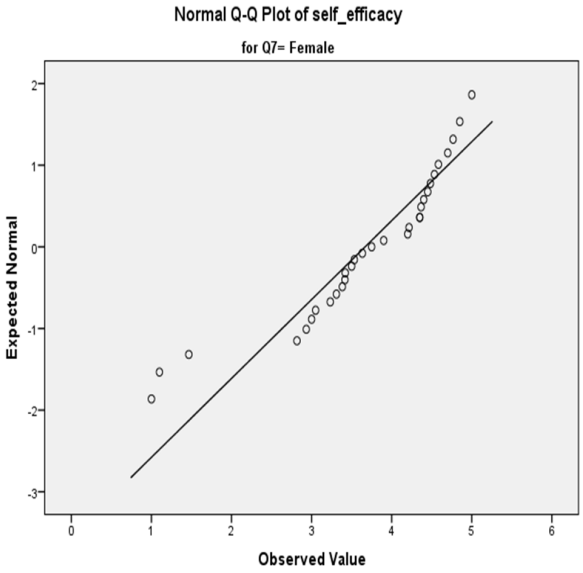

Normal Q-Q Plot of Choice
for Q7= male
Expected Normal
Observed Value

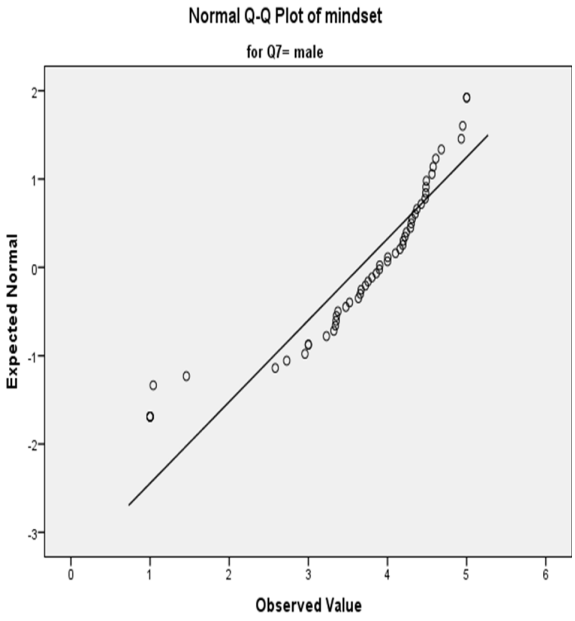

Normal Q-Q Plot of Choice
for Q7= Female
Expected Normal
Observed Value

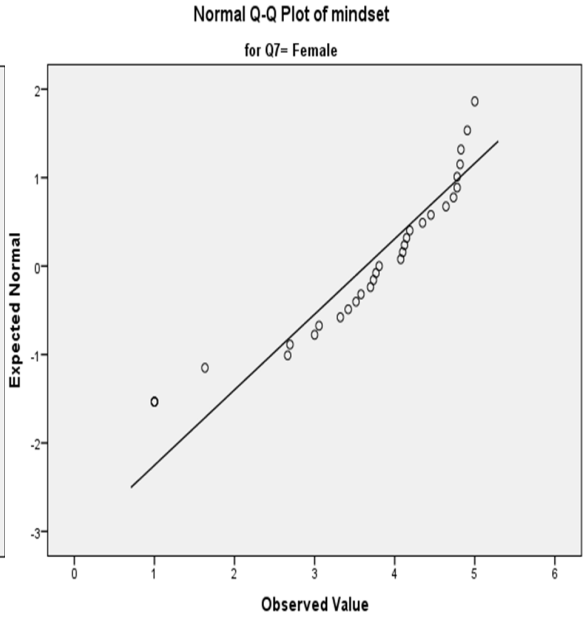

Normal Q-Q Plot of Monitoring
for Q7= male
Expected Normal
Observed Value


Normal Q-Q Plot of Monitoring
for Q7= Female
Expected Normal
Observed Value


Normal Q-Q Plot of self_efficacy
for Q7= male
Expected Normal
Observed Value

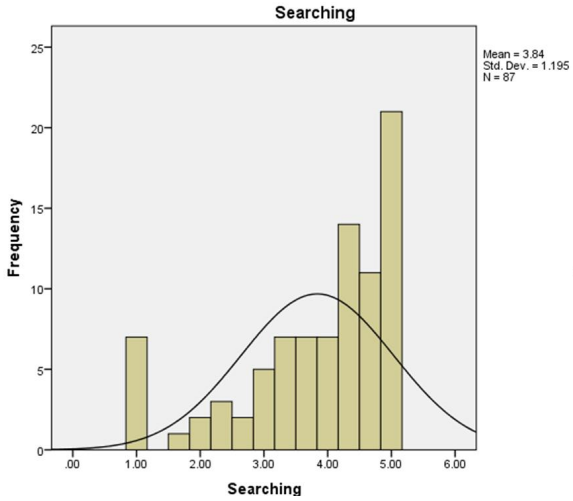

Normal Q-Q Plot of self_efficacy
for Q7= Female
Expected Normal
Observed Value

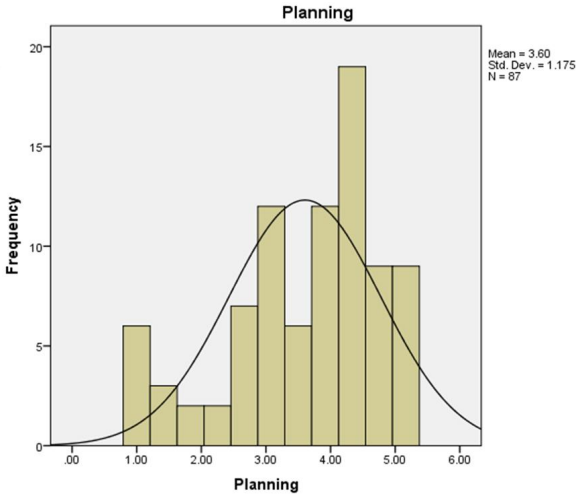

Normal Q-Q Plot of mindset
for Q7= male
Expected Normal
Observed Value

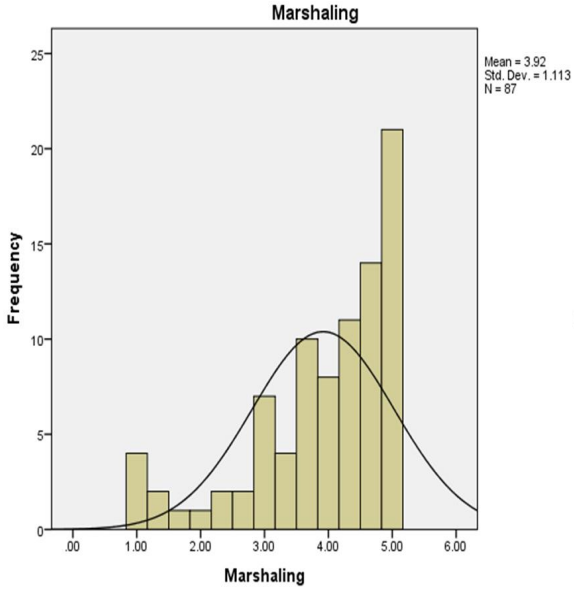

Normal Q-Q Plot of mindset
for Q7= Female
Expected Normal
Observed Value

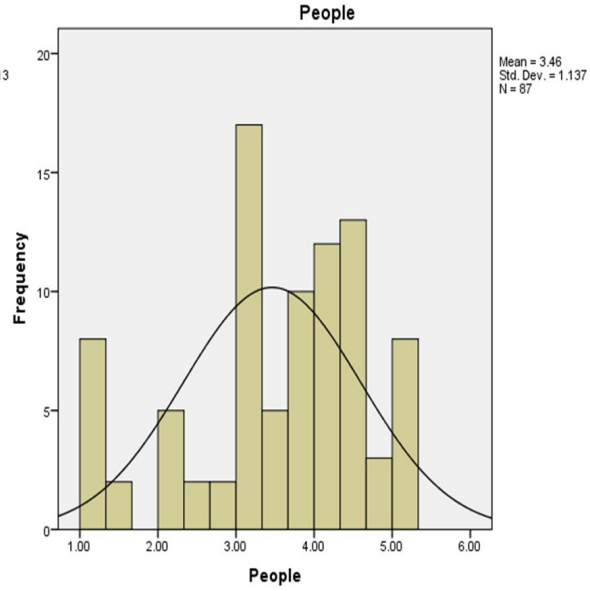
APPENDIX E

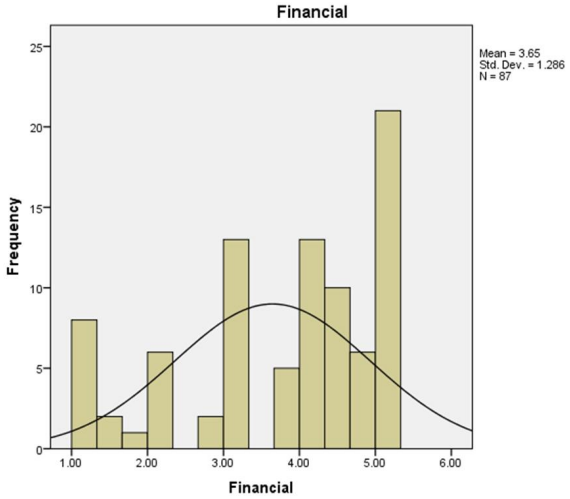
Normality test: Frequency distributions plots

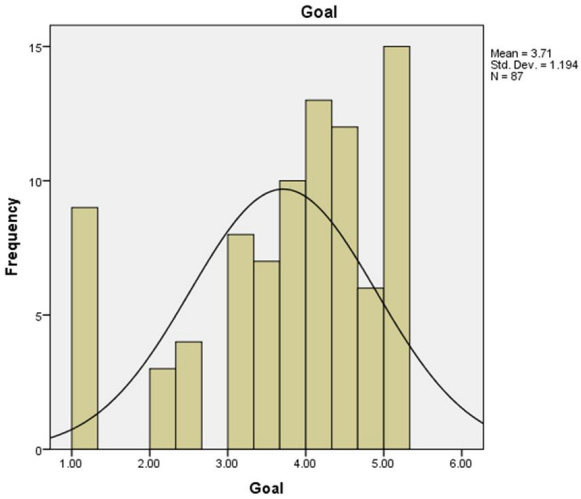


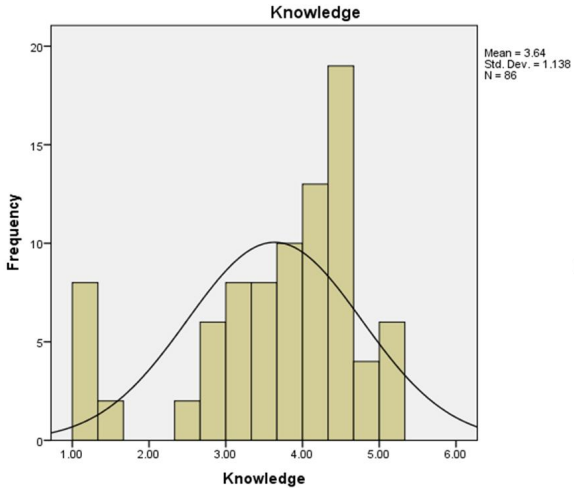


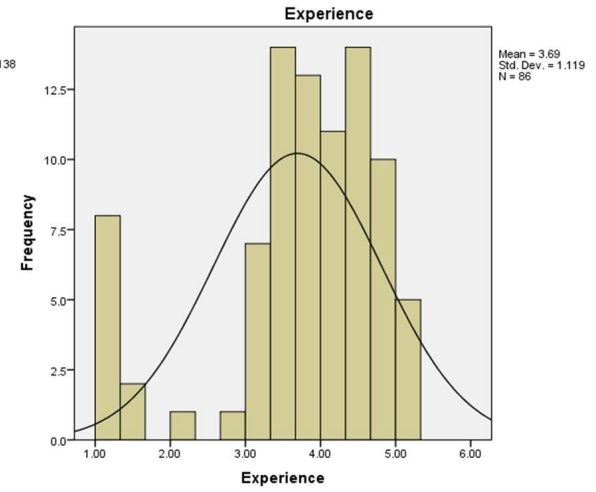


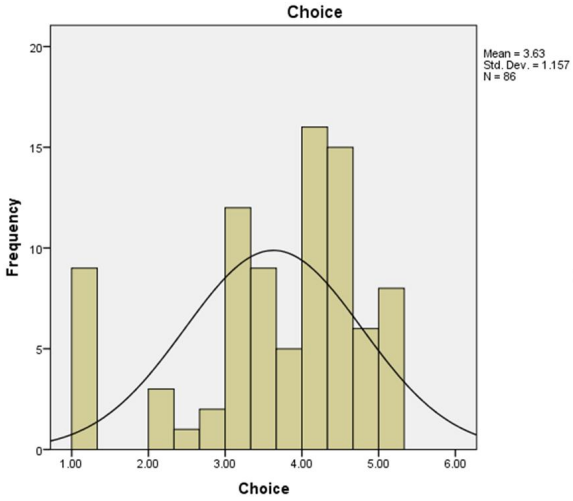


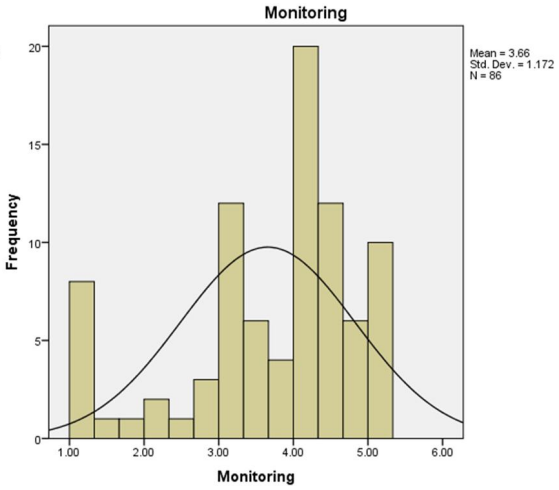

Financial
Mean = 3.65
Std. Dev. = 1.286
N = 87
Frequency
Financial

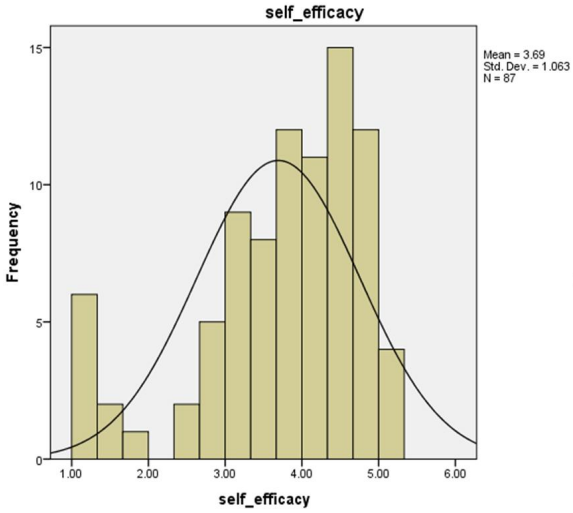

Goal
Mean = 3.71
Std. Dev. = 1.194
N = 87
Frequency
Goal

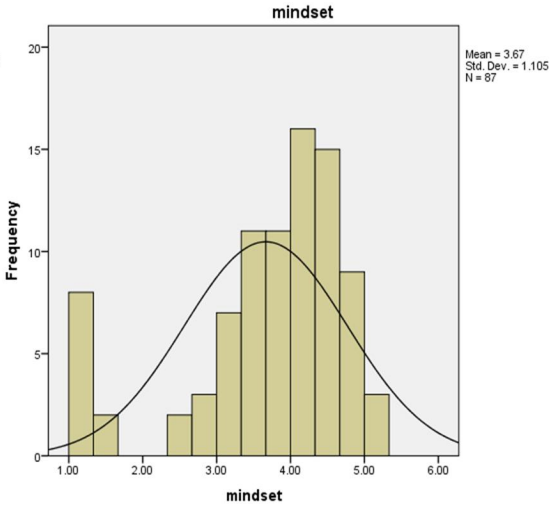

Knowledge
Mean = 3.64
Std. Dev. = 1.138
N = 86
Frequency
Knowledge


Experience
Mean = 3.69
Std. Dev. = 1.119
N = 86
Frequency
Experience


Choice
Mean = 3.63
Std. Dev. = 1.157
N = 86
Frequency
Choice


Monitoring
Mean = 3.66
Std. Dev. = 1.172
N = 86
Frequency
Monitoring


self_efficacy
Mean = 3.69
Std. Dev. = 1.063
N = 87
Frequency
self_efficacy


mindset
Mean = 3.67
Std. Dev. = 1.105
N = 87
Frequency
mindset

APPENDIX F

Non-parametric tests: Mann-Whitney results

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Searching is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.068	Retain the null hypothesis.
2	The distribution of Searching is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.059	Retain the null hypothesis.
3	The distribution of Planning is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.048	Reject the null hypothesis.
4	The distribution of Planning is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.140	Retain the null hypothesis.
5	The distribution of Marshaling is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.030	Reject the null hypothesis.
6	The distribution of Marshaling is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.129	Retain the null hypothesis.
7	The distribution of People is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.016	Reject the null hypothesis.
8	The distribution of People is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.096	Retain the null hypothesis.
9	The distribution of Financial is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.038	Reject the null hypothesis.
10	The distribution of Financial is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.061	Retain the null hypothesis.
11	The distribution of Goal is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.007	Reject the null hypothesis.
12	The distribution of Goal is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.026	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
13	The distribution of Knowledge is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.005	Reject the null hypothesis.
14	The distribution of Knowledge is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.018	Reject the null hypothesis.
15	The distribution of Experience is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
16	The distribution of Experience is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.003	Reject the null hypothesis.
17	The distribution of Choice is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
18	The distribution of Choice is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.
19	The distribution of Monitoring is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.003	Reject the null hypothesis.
20	The distribution of Monitoring is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.025	Reject the null hypothesis.
21	The distribution of self_efficacy is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.020	Reject the null hypothesis.
22	The distribution of self_efficacy is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.040	Reject the null hypothesis.

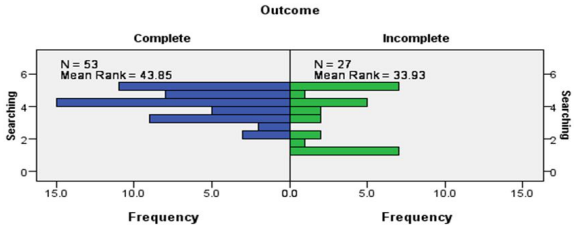
Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
23	The distribution of mindset is the same across categories of Outcome.	Independent-Samples Mann-Whitney U Test	.001	Reject the null hypothesis.
24	The distribution of mindset is the same across categories of Outcome.	Independent-Samples Kolmogorov-Smirnov Test	.010	Reject the null hypothesis.

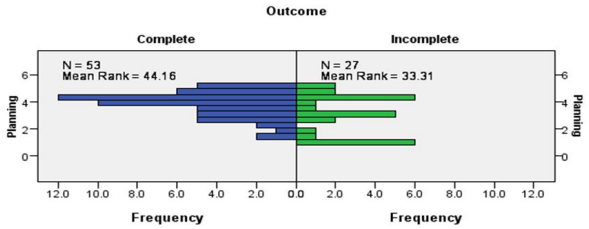
Asymptotic significances are displayed. The significance level is .05.

Independent-Samples Mann-Whitney U Test



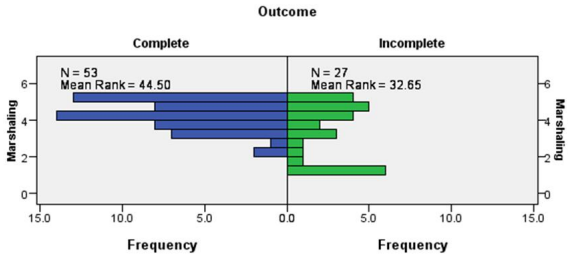
Total N	80
Mann-Whitney U	538.000
Wilcoxon W	916.000
Test Statistic	538.000
Standard Error	97.261
Standardized Test Statistic	-1.825
Asymptotic Sig. (2-sided test)	.068

Independent-Samples Mann-Whitney U Test



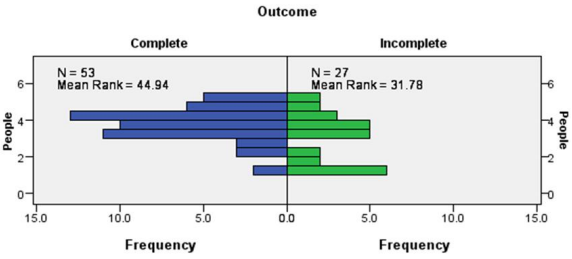
Total N	80
Mann-Whitney U	521.500
Wilcoxon W	899.500
Test Statistic	521.500
Standard Error	97.927
Standardized Test Statistic	-1.981
Asymptotic Sig. (2-sided test)	.048

Independent-Samples Mann-Whitney U Test



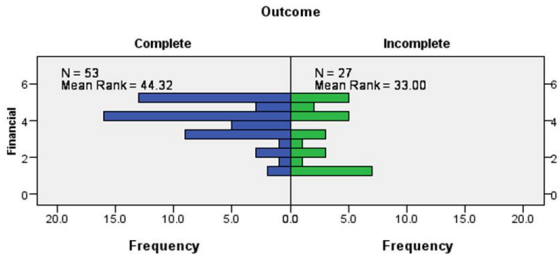
Total N	80
Mann-Whitney U	503.500
Wilcoxon W	881.500
Test Statistic	503.500
Standard Error	97.417
Standardized Test Statistic	-2.176
Asymptotic Sig. (2-sided test)	.030

Independent-Samples Mann-Whitney U Test



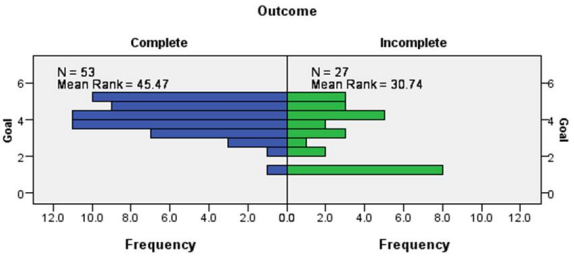
Total N	80
Mann-Whitney U	480.000
Wilcoxon W	858.000
Test Statistic	480.000
Standard Error	98.090
Standardized Test Statistic	-2.401
Asymptotic Sig. (2-sided test)	.016

Independent-Samples Mann-Whitney U Test



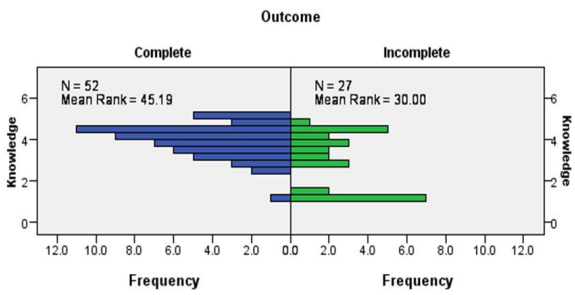
Total N	80
Mann-Whitney U	513.000
Wilcoxon W	891.000
Test Statistic	513.000
Standard Error	97.360
Standardized Test Statistic	-2.080
Asymptotic Sig. (2-sided test)	.038

Independent-Samples Mann-Whitney U Test



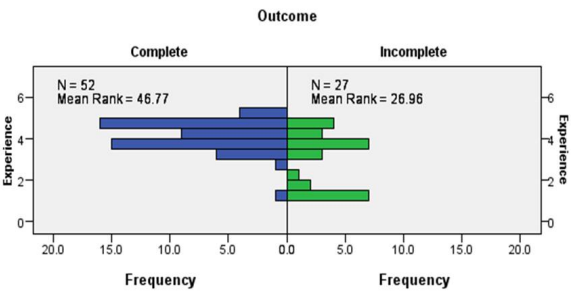
Total N	80
Mann-Whitney U	452.000
Wilcoxon W	830.000
Test Statistic	452.000
Standard Error	97.818
Standardized Test Statistic	-2.694
Asymptotic Sig. (2-sided test)	.007

Independent-Samples Mann-Whitney U Test



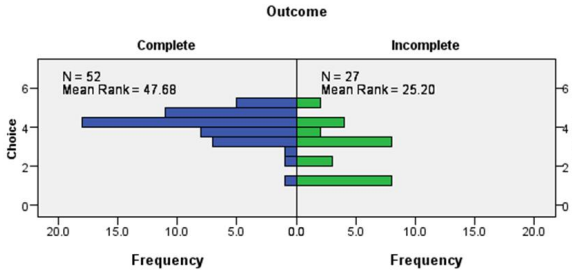
Total N	79
Mann-Whitney U	432.000
Wilcoxon W	810.000
Test Statistic	432.000
Standard Error	96.632
Standardized Test Statistic	-2.794
Asymptotic Sig. (2-sided test)	.005

Independent-Samples Mann-Whitney U Test



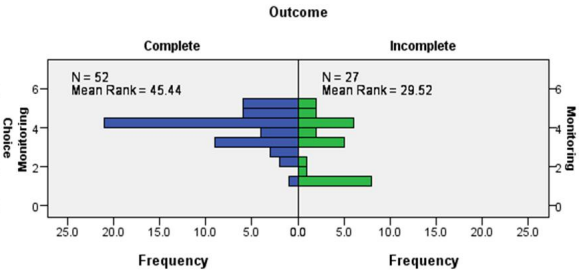
Total N	79
Mann-Whitney U	350.000
Wilcoxon W	728.000
Test Statistic	350.000
Standard Error	96.523
Standardized Test Statistic	-3.647
Asymptotic Sig. (2-sided test)	.000

Independent-Samples Mann-Whitney U Test

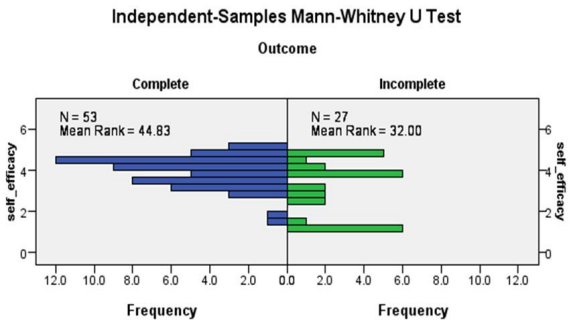


Total N	79
Mann-Whitney U	302.500
Wilcoxon W	680.500
Test Statistic	302.500
Standard Error	96.458
Standardized Test Statistic	-4.142
Asymptotic Sig. (2-sided test)	.000

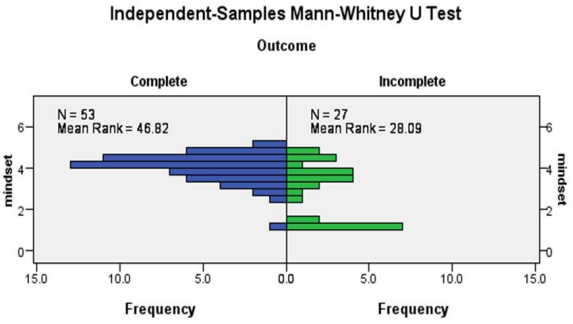
Independent-Samples Mann-Whitney U Test



Total N	79
Mann-Whitney U	419.000
Wilcoxon W	797.000
Test Statistic	419.000
Standard Error	96.517
Standardized Test Statistic	-2.932
Asymptotic Sig. (2-sided test)	.003



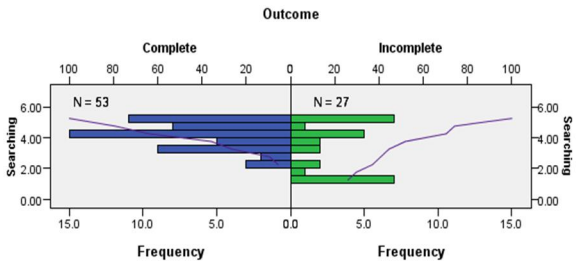
Total N	80
Mann-Whitney U	486.000
Wilcoxon W	864.000
Test Statistic	486.000
Standard Error	98.260
Standardized Test Statistic	-2.336
Asymptotic Sig. (2-sided test)	.020



Total N	80
Mann-Whitney U	380.500
Wilcoxon W	758.500
Test Statistic	380.500
Standard Error	98.248
Standardized Test Statistic	-3.410
Asymptotic Sig. (2-sided test)	.001

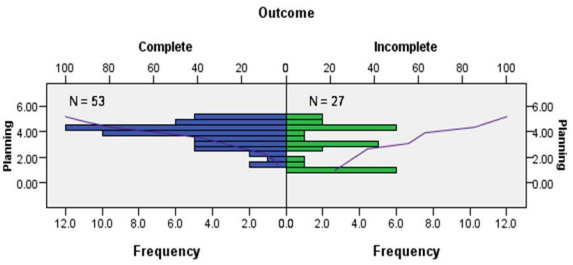
Kolmogorov-Smirnov results

Independent-Samples Kolmogorov-Smirnov Test



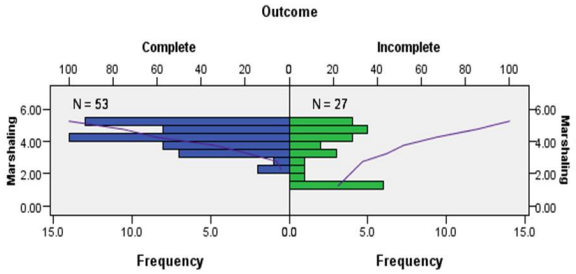
Total N		80
Most Extreme Differences	Absolute	.314
	Positive	.052
	Negative	-.314
Test Statistic		1.327
Asymptotic Sig. (2-sided test)		.059

Independent-Samples Kolmogorov-Smirnov Test



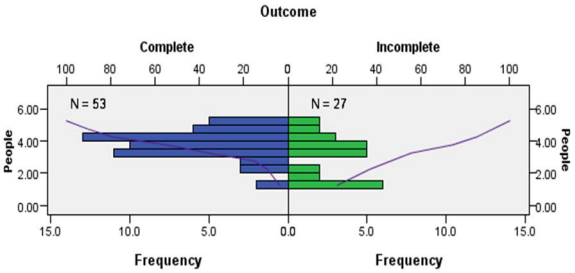
Total N		80
Most Extreme Differences	Absolute	.273
	Positive	.000
	Negative	-.273
Test Statistic		1.153
Asymptotic Sig. (2-sided test)		.140

Independent-Samples Kolmogorov-Smirnov Test



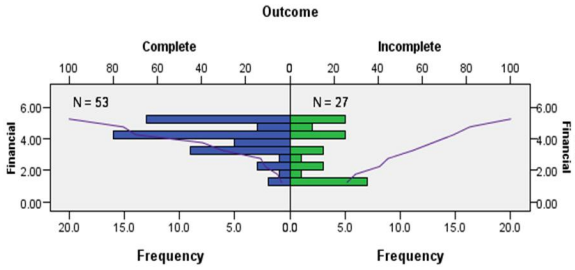
Total N		80
Most Extreme Differences	Absolute	.277
	Positive	.000
	Negative	-.277
Test Statistic		1.170
Asymptotic Sig. (2-sided test)		.129

Independent-Samples Kolmogorov-Smirnov Test



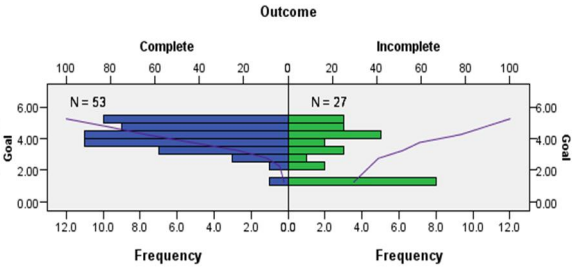
Total N		80
Most Extreme Differences	Absolute	.291
	Positive	.000
	Negative	-.291
Test Statistic		1.232
Asymptotic Sig. (2-sided test)		.096

Independent-Samples Kolmogorov-Smirnov Test



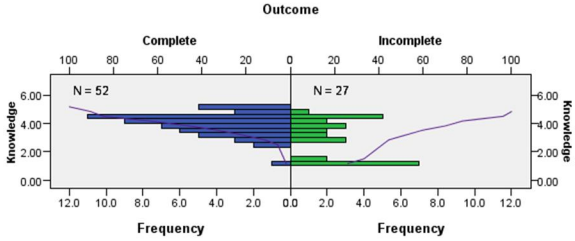
Total N		80
Most Extreme Differences	Absolute	.312
	Positive	.000
	Negative	-.312
Test Statistic		1.321
Asymptotic Sig. (2-sided test)		.061

Independent-Samples Kolmogorov-Smirnov Test



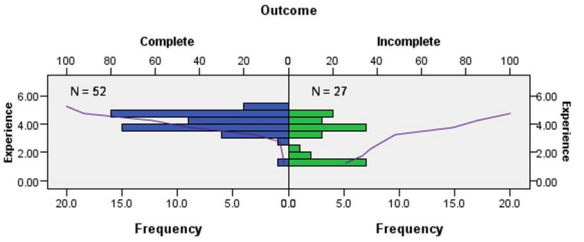
Total N		80
Most Extreme Differences	Absolute	.349
	Positive	.000
	Negative	-.349
Test Statistic		1.475
Asymptotic Sig. (2-sided test)		.026

Independent-Samples Kolmogorov-Smirnov Test



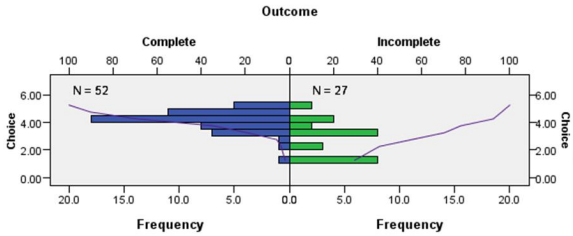
Total N		79
Most Extreme Differences	Absolute	.365
	Positive	.000
	Negative	-.365
Test Statistic		1.537
Asymptotic Sig. (2-sided test)		.018

Independent-Samples Kolmogorov-Smirnov Test



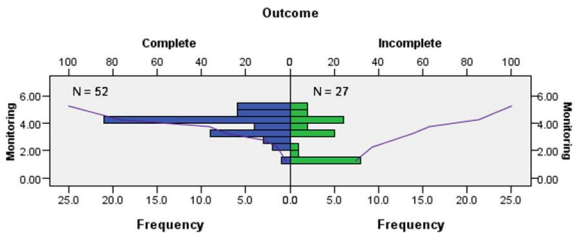
Total N		79
Most Extreme Differences	Absolute	.424
	Positive	.000
	Negative	-.424
Test Statistic		1.787
Asymptotic Sig. (2-sided test)		.003

Independent-Samples Kolmogorov-Smirnov Test



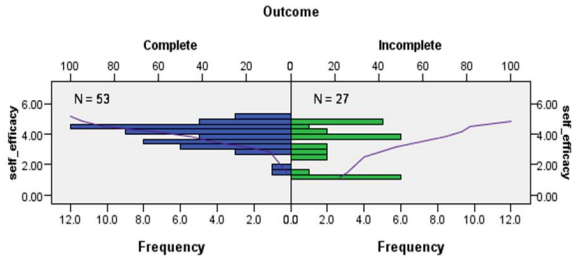
Total N		79
Most Extreme Differences	Absolute	.528
	Positive	.000
	Negative	-.528
Test Statistic		2.225
Asymptotic Sig. (2-sided test)		.000

Independent-Samples Kolmogorov-Smirnov Test



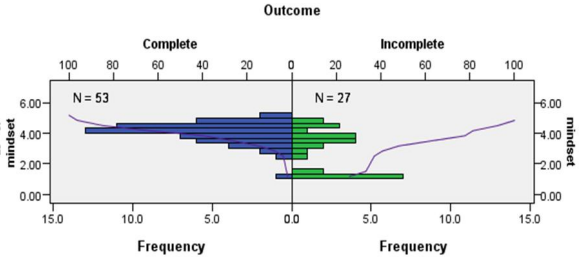
Total N		79
Most Extreme Differences	Absolute	.351
	Positive	.000
	Negative	-.351
Test Statistic		1.480
Asymptotic Sig. (2-sided test)		.025

Independent-Samples Kolmogorov-Smirnov Test



Total N		80
Most Extreme Differences	Absolute	.331
	Positive	.054
	Negative	-.331
Test Statistic		1.398
Asymptotic Sig. (2-sided test)		.040

Independent-Samples Kolmogorov-Smirnov Test



Total N		80
Most Extreme Differences	Absolute	.384
	Positive	.000
	Negative	-.384
Test Statistic		1.626
Asymptotic Sig. (2-sided test)		.010