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## **Entrepreneurial Intentions and the Theory of Planned Behaviour**

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## **I. ABSTRACT**

The study aimed to validate the applicability of the Theory of Planned Behaviour and to test its sufficiency within a contextual setting that has seemingly received limited prior focus. The sample comprised of 134 part-time learners from a university business school within South Africa; who are arguably older, hold more work experience and who are more ethnically diverse than subjects in most prior research. Importantly, this study combined construct measurement scales from two other studies in an attempt to improve measurement reliability.

Findings suggest that the Theory of Planned Behaviour was a significant predictor of entrepreneurial intention within the context of an emerging economy, explaining 21.1% of the variation in student's entrepreneurial intention. Further analysis revealed that demographic variables were found to have a significant residual effect beyond the predictor variables within the Theory of Planned Behaviour, explaining 6.9% more of the total variation in student's entrepreneurial intention when added to the Theory of Planned Behaviour. Closer investigation revealed that a particular racial group (black individuals) was solely responsible for the significant influence on intentions, thus rendering age, gender and all other racial groups as weak, insignificant contributors. These results suggest that the Theory of Planned Behaviour is not sufficient in capturing all the variation in entrepreneurial intention.

## **II. KEYWORDS**

Entrepreneurial Intent; The Theory of Planned Behaviour; Emerging Economy

## **III. DECLARATION**

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

..... **Date:** 11 November 2013

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## VIII. LIST OF ABBREVIATIONS

SA	South Africa
NDP	National Development Plan
GDP	Gross Domestic Product
GEM	The Global Entrepreneur Monitors
TPB	Theory of Planned Behaviour
HEI	Higher Educational Institutions
SEE	Shapero's Entrepreneurial Event
MBA	Master of Business Administration
VIF	Variance Inflation Factor

*'If you are going to go through hell, keep going.'*

*~ Winston Churchill*

# 1. RESEARCH PROBLEM AND PURPOSE

## 1.1. Introduction

Despite the dawn of democracy for South Africa (SA) in 1994, the country remains an economy with one of the highest inequality rates within the world (WorldBank, 2013). These authors claim that with unresolved complex economic challenges, the country appears locked into a low level equilibrium of low growth, poverty and social exclusion, alongside high unemployment. Real domestic output according the SARB (2013), contracted in the final quarter of 2012 settling at 2.5% (down from 3.5% in 2011); unemployment levels remain unchanged at 25.2% (StatsSA., 2013) with no immediate signs of recovery.

According to the World Bank (2013), the National Development Plan (NDP) calls for a broad, multidimensional action framework for changing the current development trajectory within SA. The three main strategic goals of the NDP 2030 vision, is to double the Gross Domestic Product (GDP), eliminate poverty and reduce inequality, thus in turn decreasing the country's income Gini-Coefficient from 0.70 to 0.60. In light of a decline in private sector employment and an unsustainably bloated public sector acting as a counter balance, the NDP's strategic goals are arguably desolate.

SA seems to be locked into a paradigm of unsustainable job creation. With the public sector being the sole positive contributor to employment growth since 1994, there seems to be little hope for altering the inequality situation among the

country's citizens. Whilst the private sector remains focussed on process efficiencies and costs minimisation, it becomes glaringly obvious that the creation of alternative sources of employment is of paramount importance to remedy the existing challenge. A question to be examined is whether entrepreneurship is one such alternative; and should this be true, then policy makers, including public and private enterprise should be actively campaigning in its favour.

The economic benefit derived through entrepreneurship results in social upliftment which is likely to benefit industry as a whole for obvious reasons. Upliftment brings about inclusion, the opportunity for individuals to partake in economic activity which in turn benefits industry. Enterprises then have the ability to penetrate a larger customer base which brings about economies of scale, improving profitability or enabling companies to reduce price which allows for greater subsequent inclusion. With this in mind, it may suffice to say that there is a need for disruptive change that signals the role of entrepreneurship and the importance of political and social support. Importantly, stakeholders are not simply isolated to policy makers, but rather to all citizens of an economy.

## **1.2. Entrepreneurial Activity for Economic Development**

Entrepreneurship as discussed in the previous section was noted as a possible solution to SA's unemployment challenges. At this point it would be useful to explore the term in more detail to understand what entrepreneurship practically entails.

Kao (1989) defines an entrepreneur as a person who is able to define a vision of what is possible, attract people to rally around that vision and then transform that vision into a reality. Two decades on, Nieman and Nieuwenhuizen (2009) claim that an entrepreneur identifies and exploits opportunities in order to make a profit. What becomes apparent is that entrepreneurship could be seen as a series of activities that are carried out by an individual called an entrepreneur in order to achieve certain objectives. There may be multiple objectives, but there is seemingly always an underlying profit motive in order to sustain their activities.

Gartner (1988) shared similar views, suggesting that the focus should be on entrepreneurship as a process and not so much about the unique characteristics bestowed upon an individual who executes the process. Further, that the activity of creating new organisations represents a process; and the entrepreneur as the agent executing the process. If there is economic benefit to be derived from entrepreneurial activity, then this could be seen as the critical ingredient to encourage innovation, generate employment and build social and economic wealth within an economy (Wong, Ho, & Autio, 2005).

On the other hand, Koster and Rai (2008) present a counter argument cautioning that entrepreneurship has not proven to be positively related to economic growth within the context of developing economies. They point out that previous research has largely focussed on developed economies, which leaves a great deal of uncertainty as to its applicability to developing nations. Sautet (2013) shares similar views but clarifies that entrepreneurship will only contribute positively to

economic development when the activity spans beyond the confines of a local context. He refers to *local* and *systemic* entrepreneurship, the former of which lacks the economies of scale and scope of opportunity necessary for growth and subsequent development. This provides a possible explanation as to why entrepreneurial activity in developing nations, albeit productive, does not seem to have the desired economic affect that most believe it should.

If entrepreneurial activity, in particular the scale and scope of activity is important for growth, then it stands to reason that stakeholders should be encouraging individuals to engage in venture creation that extends beyond the realm of a local context. Sautet (2013) confirms a multiplicity of factors potentially stifling an entrepreneurial transition, most being institutional in nature such as government regulations, ill-defined and enforced property rights and regime uncertainty. This apparent entrepreneurial quagmire may serve as a barrier to entry for individuals with limited experience, knowledge or know-how. Of those already engaged in local activity, it may be viewed as the safer option to avoid the risk exposure inherent within the transition to systemic entrepreneurship.

### **1.3. Significance of Entrepreneurial Intentions within South Africa**

According to Davies (2001) the larger vision of economic growth and job creation within SA is directly linked to the level of entrepreneurial drive that fuels new business start-ups and business expansion. Linking this to the age old question of “what makes people start new business”, one can directly link entrepreneurial drive

as a precursor to firm creation. In some instances, venture creation could result by accident, but Krueger, Reilly, and Carsrud (2000) report that entrepreneurial activity is largely an intentionally planned behaviour. Should this be true, it seems reasonable to suggest that *entrepreneurial intention* is closely related to entrepreneurial drive and therefore in the absence of intentionality, entrepreneurial drive would be weak.

SA's rate of entrepreneurial intentions for 2012 was 14%, down from 18% in 2011 and 17% in 2010 (Turton & Herrington, 2012). These authors report that the 2012 figure is significantly below the average of 27% for efficiency driven economies and a cause for concern because of its close association with entrepreneurial activity. Intentions are said to capture the emotional factors that influence behaviour, representing the willingness and the degree of effort an individual is planning to exert in order to perform the said behaviour (Ajzen, 1991). If venture creation is of paramount importance for economic development; then stakeholders should be concerned with the factors that are likely to influence an individual's intentionality. If intentions can be developed, then one could design policies that are focussed on supporting the antecedents responsible for influencing intentionality.

The Global Entrepreneurship Monitor Report (GEM) for 2012 refers to the Theory of Planned Behaviour (TPB) as the model most frequently used to analyse intentions. The model is a theoretical framework said to explain the influence of explicit exogenous factors on an individual's intention and their indirect relationship with a behaviour through intention (Krueger et al., 2000). At an elementary level,

an individual's entrepreneurial intention is influenced by the perceived desirability and feasibility of the entrepreneurial behaviour; if entrepreneurship is viewed as attractive and credible then one is more likely to have a positive attitude toward the behaviour. Similarly if there is a high degree of perceived control over the behaviour, one is likely to have a positive association with the behaviour in question (Ajzen, 1991).

According to Turton and Herrington (2012), SA fares above average for attitude toward entrepreneurship relative to other efficiency driven economies. However they explain that a large deterrent to a favourable attitude is the extreme fear of business failure and the subsequent humiliation among one's peers. On the other hand their findings report that behavioural feasibility within SA hinges off education and the subsequent belief of one's self-efficacy. Mitchell (2006) supports this finding and proposes that higher educational institutions (HEI's) can play a role in creating and increasing an entrepreneurial disposition among South African citizens. HEI's can instil a clear understanding of the risks and rewards, opportunity seeking and recognition skills, including the creation and destruction of enterprises. Should this be true, then the TPB could be used as a framework for all stakeholders to promote an entrepreneurial agenda.

#### **1.4. Conclusion**

In closing, SA faces a harsh reality of high levels of poverty, social exclusion and unemployment. These structural headwinds are likely to stifle economic growth

into the foreseeable future emphasising the need for a formal intervention. The act of entrepreneurship has proven to aid with economic growth and as such it stands to reason that entrepreneurial support should be of paramount importance for all citizens. Davies (2001) highlights the severity of SA's employment problem, claiming that the country's ability to absorb new recruits into the formal sectors has fallen significantly within the past three decades. If the trend is to be reversed, then individuals need to be encouraged to become job-creators instead of job-seekers (Mitchell, 2006). If SA is to become an entrepreneurially driven economy (Louw et al., 2003), then it stands to reason that stakeholders should be concerned with those factors that are likely to lead to entrepreneurial activity.

## **2. LITERATURE REVIEW**

### **2.1. Introduction**

The following chapter serves to review and evaluate the literature informing this study. The chapter is organised into two parts, commencing with a synopsis of prior entrepreneurial research and will be titled *The Focus of Prior Entrepreneurial Research*. It then continues to the *Theory of Planned Behaviour* where the theoretical constructs are introduced and then followed by a section dedicated to *prior empirical research*. The prior empirical research is centred on studies with a predominant focus on the TPB; however it includes studies that used various integrated models and components to illustrate how research had evolved to eventually settle on the TPB as the best predictor of entrepreneurial intentions. All research findings and recommendations for future studies were detailed within each of their relevant sections.

### **2.2. The Focus of Prior Entrepreneurial Research**

Over recent years, entrepreneurial studies have centred on the intentional, expectancy-driven and situational nature of the entrepreneurial decision rather than the traditional deterministic view of trait and demographic research (Autio, Keeley, Klofsten, Parker, & Hay, 2001). Trait studies according to Gartner (1988) were approaching a saturation point in the late 1980's and were likely to have diminishing returns as far as predictive ability was concerned. Krueger et al. (2000) some twelve years later confirmed this prediction, noting that the trait

research had failed to provide any additional insight to what was already known about the entrepreneurial decision. These authors concluded that studies concerning situational and personal factors alone had resulted in disappointingly poor explanatory power and had spurred researchers to investigate alternative approaches.

Although it was generally accepted that trait research had contributed to the body of knowledge, Autio et al. (2001) went a step further and questioned the statistical validity of prior findings. These authors claimed that the method of examination was potentially flawed; suggesting that by examining individuals after the entrepreneurial event, it assumed that the learning's within the entrepreneurial process had no influence on the individual's traits, attitudes and beliefs. Additional to the methodological concern, the trait and demographic approach assumed a fairly strong deterministic outcome. According to Autio et al. (2001), it suggests that if a person possesses a specific trait, then by design they will behave in a particular way; they continue to explain that it fails to appreciate the dynamics of personal expectations, situational factors and social valuations that influence an individual's decision making.

This could explain why Davidsson (1995) focussed on integrated models that included an array of variables ranging from situational, demographic, personal background, and domain specific attitudes. What becomes evident is that entrepreneurial research within the 1990's was trending toward psychological literature which would eventually settle on intentions as being the best predictor of

planned behaviour (Autio et al., 2001). Interestingly, entrepreneurial intention theories had made their debut a decade earlier (Ajzen, 1991; Shapero & Sokol, 1982) but were only gaining popularity a number of years later, despite it originally being reported that entrepreneurial activity was exactly the type of planned behaviour for which intentions models were ideally suited (Bird, 1988; Katz & Gartner, 1988).

The intentions model in question are said to reveal why exogenous factors that are situational or individual in nature (e.g. traits and demographics) result in poor explanatory power when analysed in isolation (Krueger et al., 2000). Ajzen (1991) explains that exogenous variables only influence intentions and behaviour indirectly through their influence on an individual's attitude toward the behaviour. In this particular case, the behaviour is entrepreneurship. Simplistically, exogenous variables influence attitude; a person's attitude in turn is related to intentions and intentions thereafter predict the behaviour in question (Krueger et al., 2000). Attitude effectively acts as a mediator between exogenous factors and the intention to engage in the behaviour. This indirect relationship could therefore explain why prior research has yielded insignificant results.

Van Gelderen et al. (2008) discuss two models that have dominated literature over recent years. Firstly, Ajzen's (1991) TPB explains behavioural intentions and its antecedent factors namely *attitudes*, *subjective norm* and *perceived behavioural control*; and secondly, Shapero and Sokol's (1982) Shapero Entrepreneurial Event (SEE) model which is largely identical to the TPB with exception that subjective

norm is replaced with a variable called *propensity to act*. Krueger et al. (2000) compares these two models in terms of their ability to predict entrepreneurial intentions and concludes that both receive empirical support as valid predictors. Their findings support earlier research (Krueger & Brazeal, 1994) that reports a considerable degree of overlap between the TPB and SEE models.

Despite having presented two intentions models in the preceding paragraph, the researcher has chosen to refine the focus of this study to one model, namely the TPB. This decision follows from van Gelderen et al. (2008) who claimed that the theoretical specification of the TPB is more detailed and consistent than the SEE and therefore likely to aid with successful construct operationalization. Following on and in part leading to the purpose of this study, Ajzen (1991) states that the TPB is said to be *sufficient* [emphasis added] in that it sufficiently captures the influence of the external factors through its predictor variables, perceived behavioural control, subjective norm and attitude. The author explain that if any given external factor significantly predicts intention along with the model's predictor variables, then it would indicate that the TPB is not a sufficient theory as it would have failed to include variables that are the most accurate predictors of intention. In conclusion, the TPB offers the possibility of using a testable, theory driven method to validate claims of external exogenous influences (Krueger & Carsrud, 1993), thereby supporting the decision to discard the SEE from here on forward.

## **2.3. The Theory of Planned Behaviour**

### **2.3.1. Background**

Intentions according to Ajzen (1991), are “indications of how hard people are willing to try, of how much an effort they are planning to exert, in order to perform a behaviour” (p. 181). It follows then that as an individual’s intention to perform a behaviour strengthens, so the likelihood of acting upon the decision is increased. Similarly, Bird (1988) describes intentionality as a state of mind that directs a person’s attention toward a specific object or a path in order to achieve an intended objective. This description conveniently resonates with the procedural nature of entrepreneurship as earlier defined by (Gartner, 1988).

Following on, Ajzen’s (1991) asserts that behavioural intention can only find expression if the behaviour can be expressed under volitional control i.e. if the person can decide at will to perform the behaviour or not. This implies that in order for intentions to influence behaviour, there needs to be a degree of perceived control over the behaviour. Autio et al.’s (2001) research confirms that intention is significantly influenced by perceived behavioural control, which is the aggregate of the individual’s actual control and perceptions of control over the behaviour. Further, this author explains that although attitudes toward the behaviour and subjective norm influence intention, they play a supportive role within the theory because perceived behavioural control is seen as decisive for action.

Krueger et al. (2000) creates a link between the intentional model and entrepreneurship, claiming that the act of starting a business is a planned and intentional process. Their rationale was based on the large emphasis placed on the business plan in every aspect of the academic and practical treatment of starting a new business. Further, they claim that the entrepreneurial action is a way of thinking that emphasises opportunities over threats and therefore that the opportunity identification process is a planned and intentional process. These findings were similar to earlier studies (Krueger & Carsrud, 1993) where it was argued that entrepreneurial behaviour such as self-employment or starting a business is intentional and best predicted by intentions toward the behaviour and not by attitudes, beliefs, personality or demographics.

### **2.3.2. Theoretical Constructs**

Intentionality according to Ajzen (1991) is the central construct within the TPB. The framework details three antecedents of intentions namely attitude toward the behaviour, subjective norm and perceived behavioural control. To recap on a previous section, *behaviour* in the context of the present study can be seen as the act of entrepreneurship. Importantly, all three of the aforementioned antecedents are underpinned by salient information or beliefs relevant to the *behaviour* in question (Ajzen, 1991).

Attitude toward the behaviour is detailed as the first antecedent of intention and reflects the degree to which a person has a favourable assessment of the

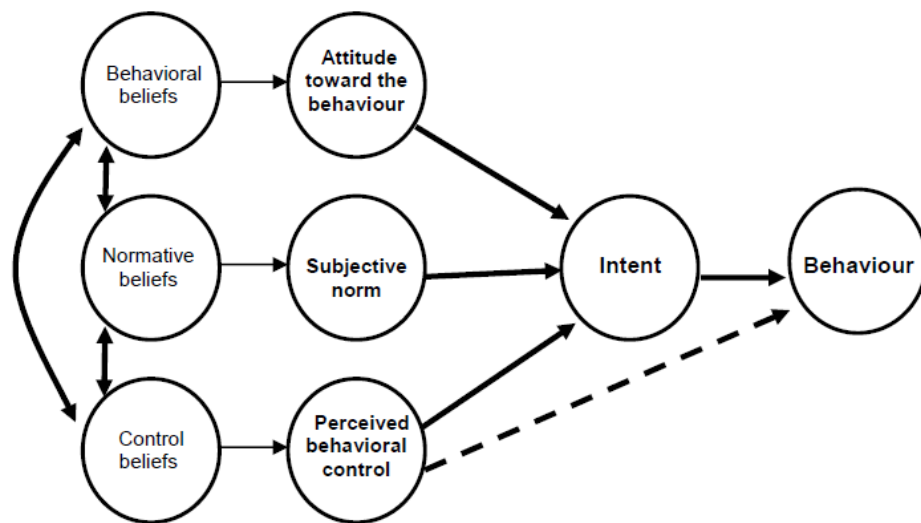
behaviour in question. Behavioural beliefs are said to influence these attitudes and are formed by associating attributes of a given behaviour to other objects or events which are already valued positively or negatively. This therefore implies that individuals immediately favour behaviours which they believe will have favourable outcomes over those which do not. To illustrate by means of an example, individuals who have witnessed a business failure and have experienced the subsequent consequences that follow, may likely associate entrepreneurship with negative connotations (and visa-versa).

Subjective norm is the second antecedent of intention and represents the perceived social pressure to perform the behaviour or not. Normative beliefs are then said to constitute the underlying determinants of subjective norms which according to Ajzen (1991) are concerned with the likelihood that important referent individuals or groups approve or disapprove of performing a given behaviour. Individuals thus establish a belief as to whether these role models will regard the outcome of the behaviour as socially acceptable or not, which ultimately influences their intention to execute on the behaviour in question.

The third and final antecedent of intention according to the TPB is the perceived behavioural control over the behaviour. Perceived behavioural control is established through control beliefs that provide the basis for an individual's perceptions which ultimately represents a perception of the ease or difficulty of performing the behaviour in question (Ajzen, 1991). The author further explains that these control beliefs may be based on past experiences (be it direct or indirect

through acquaintances or friends) or by the perceived difficulty of performing the given behaviour as a consequence of resources availability or opportunity recognition. Once again to illustrate by means of an example; individuals who have completed a business qualification may thereafter believe that they have developed the necessary competencies required to engage in new venture creation. Confidence in their ability is thus the driving force in establishing entrepreneurial intentions.

In summary, a favourable attitude and subjective norm toward the behaviour, coupled with a high degree of perceived control, strengthens the resultant intention to perform the behaviour in question (Ajzen, 1991; Autio et al., 2001). Before continuing, it would be useful to graphically illustrate the components within the TPB to serve as a reference point for propositions to follow (see Figure 2-1).



**Figure 2-1 Theory of Planned Behaviour as proposed by Ajzen (1991)**

### **2.3.3. Empirical Research**

Davidsson (1995) authored one of the earlier studies to depart from the pure trait and demographic lines of research. Although the study was not based solely on the TPB, it does illustrate the shift to the psychological approach, which is en route to the TPB. These authors proposed an economic-psychological model of factors said to influence an individuals' intentions toward new venture creation. This model integrated various components from other research including the TPB and was modified for the study of entrepreneurial intentions. The central construct was defined as Entrepreneurial conviction which according to Autio et al. (2001) corresponds closely to perceived behavioural control within the TPB. Davidsson (1995) found that entrepreneurial conviction presented the strongest direct relationship with entrepreneurial intentions. In addition, general and domain specific attitudes (e.g. attitude toward the behaviour itself) were found to mediate the effect of personal background factors (e.g. age, education, vicarious experience, radical change experience and gender) on an individual's entrepreneurial conviction. Gender and vicarious experience on the other hand were exceptions, proving to have a weak but direct relationship with convictions.

To summarise Davidsson's (1995) method and concluding discussion; the model was tested on a large sample from the general Swedish population between the age of 35 and 40 years. The objective was to select respondents who would be in a life stage where founding of a firm would be relatively common. Email questionnaires were distributed to 1800 individuals of which a total of 1313

ultimately responded. The results illustrated that demographic factors (as represented within in the personal background factors), general attitudes, and domain specific attitudes explained approximately 35% of the variation in entrepreneurial conviction as measured by the coefficient of determination  $R^2$ . Furthermore,  $R^2$  for the entire model on entrepreneurial intention explained 50% of the variation in entrepreneurial intention. An important lesson from the study was that social reality is complex and that empirical results from single studies give little basis for firm conclusion. The author therefore called for large studies and replications thereof as well as more theoretical integration and interpretation.

Kolvereid (1996) later used the TPB to predict an individual's intention to enter an occupation as either formally employed or self-employed. In addition to the constructs derived from the TPB, their study included other variables such as family background, gender and self-employment experience. Their findings demonstrated that the TPB was the strongest predictor of employment status intention and that demographic variables would influence employment status intentions indirectly through attitudes, subjective norm and perceived behavioural control. Their sampling data was collected from 143 first year undergraduate students from a Norwegian business school who were between 18 and 47 years of age. These authors call for future research to include measures of role models, attitudes, norms and perceived behavioural control. Their suggestion includes the extent to which education in entrepreneurship influences the determinants of intentions.

Two years later, Tkachev and Kolvereid (1999) repeated the study in a Russian context using the TPB to predict an individual's intention to enter an occupation as either formally employed or self-employed. The study included an additional measure referred to as tracking models that essentially determined the influence of important role models within the participant's life. Their finding once again demonstrated that the TPB was the strongest predictor of employment status intention, explaining 45% of the variation in intention. In addition, the effect of role models and demographic characters proved to have no influence on employment status intention. Their study comprised of a sample of 512 undergraduate Russian students (between their third and sixth year of study) and included three different universities in St. Petersburg. Although demographics characters were proved to be insignificant within this context, the authors recommend future studies should include when studying entrepreneurial behaviour. Further, they highlight an important point in that research in the context of *emerging economies* [emphasis added] is an opportunity to test theories that were developed in advanced western economies.

Following on, Krueger et al. (2000) compared Ajzen's (1991) TPB to Shapero and Sokol (1982) SEE model. Within this research, Ajzen (1991) is quoted as saying that intentions depend on the perceptions of personal attractiveness (e.g. attitude toward the behaviour), feasibility (e.g. perceived behavioural control) and social norms (subjective norms). Similarly and in comparison, Shapero and Sokol (1982) claim that entrepreneurial intentions depend on the perceptions of personal desirability, feasibility and the propensity to act. The research results suggest that

both models are statistically relevant in predicting entrepreneurial intentions and follows with claims that intentions are said to be the single best predictor of planned behaviour. Their sample comprised of 97 senior university business students with a broad range of experiences and who were currently facing important career decisions.

Krueger et al.'s (2000) adjusted  $R^2$  for the TPB global regression model (comprised of desirability, social norms and feasibility on intentions) was recorded as 0.35. This can be interpreted as explaining 35% of the variation in intention. Although a significant result, it is important to note that the social norm component (albeit strongly correlated with intentions in isolation), is statistically insignificant when combined with desirability and feasibility. In contrast, the adjusted  $R^2$  for the SEE global regression model (which included desirability, propensity to act and feasibility on intentions) was recorded as 0.408 and all components were reported as statistically significant. The conclusion thereafter was that the SEE model offers marginally higher predictive power over the TPB. These authors call for future studies to test these models on samples of subjects who differ in *age*, *experience* and *ethnicity* [emphasis added]; and are who are facing important career decisions.

Shortly thereafter, Autio et al. (2001) developed an application of the TPB in an attempt to analyse the factors that influence entrepreneurial intent among university students in Scandinavia and the United States of America (USA). Their total sample comprised of 3445 undergraduate student from universities in Finland, Sweden and the USA. This approach according to Autio et al. (2001) was the only

study that tested the robustness of the TPB using an international comparative sample. Descriptive statistics yielded notable differences in the mean age for the USA participants and their European counterparts. In addition, their work situation differed significantly in that 82% of the USA participants were working either full time or part time, this compared to 56% for Finland and 20% for Sweden. Lastly, career preferences were similar across all three countries and demonstrated that public sector and academic careers were the least preferred profession of choice.

Autio et al.'s (2001) global regression model explained 21.4% of the variation in intention for the Swedish group and 35.3% for the USA group. The findings conclude that perceived behavioural control had the strongest influence on intentions followed by attitude toward the behaviour and lastly a weak relationship for subjective norm on entrepreneurial intention. Although these findings were seemingly conclusive, the authors admit that the use of a single-item measurement scale to record attitude toward the behaviour was an area of weakness within their research. This then spurred the authors to repeat the study on 97 MBA students from the London Business School using improved (more comprehensive) measurement scales for both attitude and subjective norm. The findings were similar to their original study suggesting that perceived behavioural control had the most influence on intentions followed by attitude toward the behaviour. Importantly, subjective norm did not feature as statistically significant in its ability to influence entrepreneurial intention. The authors call for future research to validate the extent to which entrepreneurial intent has been followed through with entrepreneurial activity.

Lüthje and Franke (2003) later presented a modified structural model of the TPB that integrated latent constructs categorised as personal traits and contextual factors. Personal traits were comprised of risk taking propensity and an internal locus of control whilst contextual factors comprised of perceived barriers and perceived support for new venture creation. The structural design firstly proposed that the influence of personality factors were moderated through ones attitude toward entrepreneurship and secondly that contextual factors had a direct influence on an individual's entrepreneurial intention. Their sample comprised of 512 students at the MIT School of Engineering, the majority whom were not involved in any form of entrepreneurial activity at the time of this research.

Their findings demonstrate that attitude toward entrepreneurship had the strongest relationship with entrepreneurial intentions and was influenced by both personality constructs namely internal locus of control and risk taking propensity. This finding supports the TPB which suggests that attitudes are influenced by exogenous factors which ultimately determines the desirability of the behaviour in question. On the other hand, the contextual factors proved to have a direct relationship with entrepreneurial intentions; this once again aligning closely to the TPB which suggests that the perceived behavioural control directly influences an individual's perception of feasibility. Lüthje and Franke (2003) hypothesise that future research in the area of attitude formation holds promise for an improved understanding of entrepreneurial intention and the effective cultivation of a business founding spirit among students.

Shortly thereafter, Kristiansen and Indarti (2004) attempted to identify determinants of entrepreneurial intention among young people with a primary objective to compare the impact of different economic and cultural contexts. Their proposed model considered demographic and individual background factors (measured as gender, age, educational background and work experience), personality and attitudes (measured as need for achievement, locus of control and self-efficacy), and contextual elements (measured as capital access, information access and social networks), all of which were presumed to have an influence on entrepreneurial intention. Their total sample comprised of 251 university students that were drawn from the student population of two universities, one based in Norway and the other in Indonesia. The researchers report that they employed a judgement sampling method in an attempt to secure a minimum number of economics and business administration students within their sample.

Their findings demonstrate that demographic and individual background variables which were age, gender and previous employment experience have no significant influence on entrepreneurial intentions. However, when added to the regression model it increased the percentage of explained variance from 22.5% to 25.1% and 25.9% to 30% for the Norwegian and Indonesian sample respectively. Secondly, personality factors such as the need for achievement and locus of control, only affect entrepreneurial intentions if they affect self-efficacy. Finally self-efficacy and a combination of contextual factors such as access to capital, information and social networks (defined as instrumental readiness) all influence entrepreneurial intentions in the expected direction. These findings once again align closely to the

perceived desirability and feasibility components of the TPB and therefore could be viewed as supporting the well-established body of knowledge.

Following on, Van Gelderen et al. (2008) presented a detailed empirical investigation of entrepreneurial intentions using the TPB as their testable, theory-driven method. The attitude construct was comprised of Importance of autonomy, Importance of wealth, Challenge, Financial security and Work load avoidance. Perceived behavioural control was comprised of perseverance, creativity, entrepreneurial alertness and self-efficacy; and lastly subjective norm comprised of a single-item measure simply referred to as subjective norm. Their total sample contained 1225 undergraduate students from four universities across the Netherlands who were all within their second, third or fourth year of a business administration curriculum.

Van Gelderen et al.'s (2008) findings demonstrate that entrepreneurial alertness which falls under perceived behavioural control and financial security under attitudes towards the behaviour present the strongest influence on an individual's entrepreneurial intentions. Subjective norm on the other hand shows the most instability in their contribution which is a similar finding to Krueger's (2000) comparison between the TPB and SEE model. The adjusted  $R^2$  for the model within this study was 0.38, explaining 38% of the variation in individual's entrepreneurial intention. These authors suggest future research to focus on entrepreneurship from a career development perspective, for example employment status choice. They claim that self-employment is fitting in the context of

boundaryless, fluctuating, or post-corporate careers, which require self-reliance of individuals and which offer few career opportunities in large corporates.

Finally, Gird and Bagraim (2008) used the TPB as a predictor of entrepreneurial intention among final year commerce students at two universities in SA. Their intention was to test the sufficiency of the theoretical framework by including four additional factors that are potentially related to entrepreneurial intention; these factors being personality traits, situational factors, prior exposure to entrepreneurship, and demographics. Their total sample comprised of 247 undergraduate students from two universities in the Western Cape province of SA of which 168 were from a historically white university and 79 from a historically black, disadvantaged university.

Gird and Bagraim's (2008) findings demonstrate that the TPB explains 27% of the variation in student's entrepreneurial intentions. Prior exposure was the only additional variable that significantly added to the predictive power of the TPB, leaving personality traits, demographic factors, and situational factors all as insignificant contributors to explaining entrepreneurial intention. According to Gird and Bagraim (2008), this study was the only one of its kind in SA where the application of the TPB and its sufficiency in explaining entrepreneurial intention has been tested. They highlight implications of their study claiming that educational initiatives should aim to promote entrepreneurship and provide opportunities to experience entrepreneurship in a way that fosters positive attitudes as well as a viable and practical career alternative. In closing, these authors suggest that their

findings should be treated with caution until future studies with more reliable measures, longitudinal data and comprehensively defined external variables can confirm their findings.

#### **2.4. Closing Remarks and Formulation of Propositions**

The theory contained in the literature discussed within this chapter unearths a number of interesting observations suitable for further investigation. Davidsson (1995) emphasised the importance of large replicable studies as well as more theoretical integration and interpretation. This certainly spurred subsequent research to incorporate and test the TPB but arguably not to the extent that one could comfortably claim its applicability across cultural and *economically diverse contexts* [emphasis added].

Tkachev and Kolvereid (1999) support this view, highlighting the importance of research in the context of emerging economies as an opportunity to test theories that were developed in advanced western economies. To the researcher's knowledge, most studies have centred on samples from advanced economies (Autio et al., 2001; Davidsson, 1995; Kolvereid, 1996; Kristiansen & Indarti, 2004; Lüthje & Franke, 2003; Van Gelderen et al., 2008). This then provides an opportunity to build on the limited literature (Gird & Bagraim, 2008) available for the emerging market economies.

Following on, Krueger et al. (2000) called for future studies to include test subjects who differed in age, experience and ethnicity. To the researcher's knowledge,

most studies prior and subsequent to these authors have focussed on younger undergraduate students, with limited work experience and ethnic diversity. Finally, Gird and Bagraim (2008) expressed concerns for the reliability of construct measurement scales. They alluded to poor reliability measurements within their study and emphasised the need for future studies to incorporate more reliable measures of the theory's predictor variables. In light of the aforementioned, the following two propositions are developed.

#### **2.4.1. Proposition 1**

The TPB will remain a *statistically significant* predictor of entrepreneurial intentions within the context of an emerging economy.

#### **2.4.2. Proposition 2**

The TPB will remain a *sufficient* predictor of entrepreneurial intentions within the context of an emerging economy.

### **3. RESEARCH HYPOTHESES**

#### **3.1. Introduction**

Following on the review of the relevant literature and formulation of the propositions, the present chapter serves to define the research questions and detail the relevant hypotheses for investigation.

#### **3.2. Research Question 1**

Proposition 1 as detailed in the previous chapter leads one to question if the TPB is truly a *statistically significant* predictor of entrepreneurial intentions within the context of an emerging economy? The question originates from an observation that the theoretical framework was developed and largely tested within advanced economies and as such may not have application in countries less developed.

#### **3.3. Research Question 2**

Proposition 2 as detailed in the previous chapter leads one to question if the TPB is a *sufficient* predictor of entrepreneurial intentions within the context of an emerging economy? The question originates from the literature which suggests that if other factors which are external to the TPB can be found to have a significant residual effect beyond the predictor variables within the TPB, then it would imply that there are other important factors that have not been accounted for within the theory that have may serve to better predict intentions than the theoretical constructs of the TPB.

### **3.4. Research Objective**

The objectives of the present study are to validate the applicability of the TPB and to test its sufficiency within a contextual setting which has seemingly received limited prior focus. The study targets subjects who are arguably older; hold more experience and who are more ethnically diverse than those in most prior research. Importantly, this study intends to combine construct measurement scales from two other studies in an attempt to improve measurement reliability.

#### **3.4.1. Hypothesis 1**

The TPB is a significant predictor of the entrepreneurial intention.

H<sub>0</sub>:  $\beta_i = 0$ ; Regression equation is not significant

H<sub>1</sub>: One or more  $\beta_i \neq 0$ ; Regression equation is significant

(i = 1,2,3; representing attitude, subjective norm, perceived behavioural control)

#### **3.4.2. Hypothesis 2**

Testing the sufficiency of the TPB, Demographic variables will not add predictive ability to the TPB when predicting entrepreneurial intent.

H<sub>0</sub>:  $R^2_{TPB} \geq R^2_{TPB + DEM}$ ; Demographic variables do not add predictive ability to the TPB

H<sub>1</sub>:  $R^2_{TPB} < R^2_{TPB + DEM}$ ; Demographic variables add predictive ability to the TPB

## **4. METHODOLOGY**

### **4.1. Introduction**

The previous chapter served to summarise the research purpose and detail the research questions and hypotheses'. The following chapter attempts to explain the research methodology which will include the research design; population and sampling; survey design and pilot study; data gathering procedure; discussion on the principle of validity and reliability; construct measurement; data analysis process; and finishes off with the research limitations.

### **4.2. Research Design**

The study employed a cross-sectional survey design using self-report questionnaires for the purpose of quantitative data analysis. Saunders and Lewis (2012) explain that cross-sectional research is the study of a particular topic at a particular point in time. The design permits the researcher to explain relationships between variables of interest but importantly does not permit inferences relating to causality. This approach according to Krueger et al (2000) is an appropriate method for theoretical model testing and therefore suitable for the purpose of this study. The quantitative approach to data analysis involves the collection data in numerical form that allows statistical tests to be undertaken such as descriptive statistics, correlation and inferential statistical analysis (Jupp, 2006).

The first hypothesis aimed to test the significance of the TPB and would be accomplished by regressing intentions against attitudes, subjective norms and

perceived behavioural control. According to Cramer and Howitt (2004), a multiple linear regression is a suitable method designed to analyse the linear relationship between a dependent variable and two or more independent variables. These authors explain that there are two general uses to multiple regression; firstly to determine the strength and direction of the linear association between a dependent and independent variables; and secondly to determine the amount of variation in the dependent variable explained by the predictor variables (independent variables).

Hypothesis two aimed to test the sufficiency of the TPB and would be accomplished in a phased approach by regressing intentions against the theory's antecedent variables, followed by a second regressive iteration that would include demographic to the model. According to Vogt (2005), the phased approach is termed a hierarchical regression in which independent variables are entered into a regression equation in a sequence specified by the researcher. The authors explain that the hierarchy of variables is determined by the researcher and are typically entered into the equation in groups or *blocks*. In the present study, demographic variables would comprise of an individual block for input.

### **4.3. Population**

Saunders and Lewis (2012) define a population as 'the complete set of group members' (p. 132). The population for the present study consisted of all individuals within SA who were likely to face important vocational decisions within the

foreseeable future. The sample frame as defined by Saunders and Lewis (2012) is 'the full list of all members of the population' (p. 133) which for all intents and purposes could not be established within this study.

#### **4.4. Sampling**

According to Autio et al. (2001), universities are institutions through which students pass on their way to future career opportunities. Further, as the date of their final graduation approaches, so too will these students be faced with important career decisions (Krueger et al., 2000) to enter (or re-enter if already employed) the workforce as formally employed or self-employed individuals. Thus, in order to gain access to individuals approaching an eminent career decision juncture, part-time learners from a university business school were approached. These individuals were all in full-time employ and represented a broad range of industries within SA.

The study employed a non-probability purposive sampling technique. Non-probability sampling according to Saunders and Lewis (2012) is an appropriate sampling method when access to the complete list of the population is not possible. Further, a purposive sampling technique is a method where the researcher's judgement is used to select the members based on certain criteria. In this study the criterion was twofold, starting with individuals who were likely to face important vocational decisions within the foreseeable future; and secondly, participants who were not already committed to entrepreneurial careers. Krueger

et al. (2000) emphasises the importance of the second criterion, claiming that by including individuals who are already committed to entrepreneurial careers, introduces potential biases that can censor data unpredictably.

#### **4.5. Unit of Analysis**

The unit of analysis according to Lewis-Beck, Bryman, and Liao (2004) is the most basic element of a scientific research project about which the researcher may generalise. In the present study it was defined as individuals within SA who were likely to face vocational decisions. A total of 179 survey participants were captured, all of whom were formally employed within the jurisdiction of SA. Of the 179 survey participants, 134 satisfied the criterion of not being involved in entrepreneurial activity at the time when the survey was administered. The final sample size of 134 according to Saunders and Lewis (2012) was sufficiently large to meet the statistical requirements to commence with a multiple regression analysis.

#### **4.6. Survey Design and Pilot Study**

The survey was designed using an online survey creation tool. This tool made it particularly easy to design the survey layout, make amendments where required, capture the survey responses (with limited opportunity for error), and then export all responses to excel in the desired format.

A pilot test according to Saunders and Lewis (2012) is concerned with trying out a questionnaire with a small group of individuals who are similar to the participants one intends to use within the research. The objective is to address any shortcomings within the survey questionnaire before deploying to all participants. The preliminary questionnaire for the present study was sent out to five MBA students for their participation and commentary on the design and wording of particular items. This provided the opportunity to amend where applicable before incurring significant printing and distribution costs.

#### **4.7. Data Gathering Procedure**

Data collection could only commence after the researcher had received the necessary approval from the business school's ethical clearance committee. Following the committee's approval, the researcher approached the business school program manager, registrar and certain faculty members to request their support to approach the school's MBA students. The lecturers permitted the researcher to approach their class for the first 15 minutes of the scheduled lecture. A brief synopsis of the research purpose was communicated to the participants in addition to highlighting the voluntary nature of the survey participation. The approach could be described as a paper based intercept method under controlled lecture room conditions which improves the standardisation of data capture, decreases the non-response errors and increase response rates (Cooper & Schindler, 1998).

#### **4.8. Principle of Validity and Reliability**

Validity and reliability are said to influence the extent to which one can learn something about the phenomenon in a study, the probability that you will obtain statistical significance in the data results, and the extent to which one can draw meaningful conclusions from the data (Leedy & Ormrod, 2010).

According to Saunders and Lewis (2012), validity is the extent to which a data collection method accurately measures what it intended to measure; and that the research findings are what they profess to be about. Kimberlin and Winterstein (2008), suggest that construct validity is a judgement based on the accumulation of evidence from numerous studies that have used a specific measurement instrument. These authors claim that there is no statistical test to conclusively determine if a measure adequately covers a content area, or adequately represents a construct in question. Validity is thus said to rely on the judgement and endorsement of experts who provide a gold standard for other researchers to adopt (Kimberlin & Winterstein, 2008).

Reliability on the other hand according to Leedy and Ormrod (2010) is 'the consistency with which a measuring instrument yields a certain result where the entity being measured hasn't changed' (p. 29). According to Trobia (2008), Cronbach's alpha is a statistic that measures the internal consistency among a set of survey items believed to measure the same construct that could be formed into

one scale. These authors report that alpha coefficients range between zero and one, with larger values denoting greater scale coherence and reliability.

In closing, Tavakol and Dennick (2011) explain that instrument reliability is closely related to its validity, to the extent that validity is dependent on reliability. On the other hand, these authors claim that instrument reliability does not necessarily assume its validity. It implies that an instrument can be reliable but if it is consistently measuring the incorrect construct, then it is said to have no validity. It is therefore apparent that both scale validity and reliability were essential prerequisites for the purposes of this research. The researcher in turn adopted instruments that had been previously developed and validated by what could be regarded as experts (Autio et al., 2001; Krueger et al., 2000) within the field of entrepreneurship and thereafter recorded a Cronbach's alpha coefficient to test for internal reliability.

#### **4.9. Construct Measurements**

The study employed the use of two independent measurement scales to record the attitude, subjective norm and perceived behavioural control constructs. The objective was to aggregate the results from both scales to improve the robustness of the construct measurement, in turn addressing a notable limitation within Gird and Bagraim's (2008) research. The measurement scales were adopted from Krueger's (2000) study, comprised of a single statement measure for each construct; and Autio et al. (2001), comprised of a multi-statement measure for each

respective construct. The intentions construct on the other hand did not follow this dual approach and therefore relied solely on Autio et al.'s (2001) multi-statement measurement scale.

Autio et al.'s (2001) multi-statement measures were each recorded on a Likert scale and intended to be aggregated into a composite score representing the associated construct. This resultant score would thereafter be aggregated with Krueger's (2000) single item construct to result in the final composite score for each construct in question. According to Norman (2010), although individual Likert items are of the ordinal measurement scale, the process of aggregating individual Likert items results in an interval scale suitable for parametric testing. In instances where unitary scales differed among individual items (for example one item recorded on a 5 point Likert scale and another of a 7 point Likert scale), the researcher would standardise (z-score) recordings and proceeded to aggregate the items as earlier explained.

A z-score according to Shapiro (2008) is a statistical transformation that specifies how far a particular value lies from the mean of a normal distribution in terms of standard deviations. This is particularly important because a z-score is unit-less because it removes the varying units among variables, for example pounds or kilograms (Taylor, 2008). After the transformation, all values within a variable will be measured as the number of standard deviations from the variables mean, thus making it easy for comparison with other standardised variables. Once this

process was complete, the researcher could continue with further statistical analysis.

#### **4.9.1. Construct: Attitude**

Autio et al.'s (2001) multi-statement attitude scale had successfully recorded a Cronbach's alpha coefficient of 0.76 (using z-scores to standardise measurement scales) when applied to their sample of MBA students from the London School of Business. Gird and Bagraim (2008) on the other hand, after successfully loading all items on the same component within their construct dimensionality test, recorded a Cronbach's alpha coefficient of 0.62. This result according to Nunnally and Bernstein (1994) is moderately weak but suitable for purposes of their preliminary study. Gird and Bagraim (2008) cautioned that future research should focus on developing robust measurement scales to address the reliability issues they had experienced within their study.

The present study followed on from these authors to employ Autio et al.'s (2001) multi-statement measure, comprised of three questions (hereafter referred to as *individual measurement items*); two of which were measured on a -3 to +3 bipolar response scale and the other on a 7-point Likert scale ranging from 1 to 7. Rating scale wording for the career alternative item was modified from 'Not at all desirable/Highly desirable' to 'Highly undesirable/Highly desirable'. Similarly, the item relating to the your child's choice of profession was amended from 'Bad/Good' to 'Extremely bad/Extremely good' and the remaining questions amended from 'Do

not agree/Agree' to 'Strongly disagree/Strongly agree'. The second measurement scale was employed from Krueger et al. (2000) and measured attitude with a single item statement (hereafter referred to as an individual measurement item) on a rating scale ranging from 1 to 100.

All individual measurement items were standardised (z-score) and a Cronbach's alpha coefficient thereafter recorded to test for internal reliability. The construct would be calculated as the mean of the standardised scores for item combinations that yielded the largest internal reliability coefficient and hereafter be referred to as the *aggregate construct scale*. The questions and coding for each of the aforementioned measurement items are detailed as follows:

- 1) ATT3 - An entrepreneurial career such as starting up and managing my own firm is: Highly undesirable (-3)... Highly desirable (+3)
- 2) ATT5 - If my child decided to become an entrepreneur, I myself would consider it to be: Extremely bad (-3)... Extremely good (+3)
- 3) ATT6 - I personally consider entrepreneurship to be a highly desirable career alternative for people with my professional and educational background: Strongly disagree (1)... Strongly agree (7)
- 4) ATT7 - Would family and friends want you to start your own business?: 1 (Disagree)...100 (Agree)

#### **4.9.2. Construct: Subjective Norm**

Autio et al.'s (2001) multi-statement attitude scale had successfully recorded a Cronbach's alpha coefficient of 0.80 when applied to their sample of MBA students from the London School of Business. Similarly, Gird and Bagraim (2008) after successfully loading all items on the same component within their construct dimensionality test, recorded a Cronbach's alpha coefficient of 0.88 which was markedly stronger than their predecessors.

The present study employed Autio et al.'s (2001) multi-statement measure, comprised of four questions (hereafter referred to as individual measurement items), all of which were measured on a -3 to +3 bipolar response scale. Rating scale wording was amended for all items from 'Bad/Good' to 'Highly undesirable/Highly desirable'. In addition, each item question was amended from 'If I became an entrepreneur...' to 'If I were so start my own business...'. The second measurement scale was employed from Krueger et al. (2000) and measured subjective norm with a single item statement (hereafter referred to as an individual measurement item) on a rating scale ranging from 1 to 100.

All measurement items were standardised (z-score) and a Cronbach's alpha coefficient thereafter recorded to test for internal reliability. The construct would be calculated as the mean of the standardised scores for item combinations that yielded the largest internal reliability coefficient and would thereafter be referred to

as the aggregate construct scale. The questions and coding for each of the aforementioned measurement items are detailed as follows:

- 1) SN1 - If I become an entrepreneur, my family would consider it to be: Highly undesirable (-3)... Highly desirable (+3)
- 2) SN2 - If I became an entrepreneur, my close friends would consider it to be: Highly undesirable (-3)... Highly desirable (+3)
- 3) SN3 - If I became an entrepreneur, my colleagues would consider it to be: Highly undesirable (-3)... Highly desirable (+3)
- 4) SN4 - If I became an entrepreneur, other people close to me would consider it to be: Highly undesirable (-3)... Highly desirable (+3)
- 5) SN5 - Would family and friends want you to start your own business?: 1 (Disagree)...100 (Agree)

#### **4.9.3. Construct: Perceived Behavioural Control**

Autio et al.'s (2001) multi-statement perceived behavioural control scale had successfully recorded a Cronbach's alpha coefficient of 0.75 when applied to their sample of MBA students from the London School of Business. Gird and Bagraim (2008) on the other hand, after successfully loading all items on the same component within their construct dimensionality test, recorded a Cronbach's alpha coefficient of 0.68, once again supporting their call for future studies to improve on measurement scales.

The present study employed Autio et al.'s (2001) multi-statement measure comprised of four questions (hereafter referred to as individual measurement items), each measured on a scale ranging from +1 to +5. The second measurement item was employed from Krueger et al. (2000) and measured perceived behavioural control with a single item statement (hereafter referred to as an individual measurement item) on a rating scale ranging from 1 to 100. All measurement items were standardised (z-score) and a Cronbach's alpha coefficient thereafter recorded to test for internal reliability. The construct would be calculated as the mean of the standardised scores for item combinations that yielded the largest internal reliability coefficient and would thereafter be referred to as the aggregate construct scale. The questions and coding for each of the aforementioned measurement items are detailed as follows:

- 1) PBC1 - I am confident that I would succeed if I started my own firm: Disagree (+1)... Agree (+5)
- 2) PBC2 - It would be easy for me to start my own firm: Disagree (+1)... Agree (+5)
- 3) PBC3 - To start my own firm would probably be the best way for me to take advantage of my education: Disagree (+1)... Agree (+5)
- 4) PBC4 - I have the skills and capabilities required to succeed as an entrepreneur: Disagree (+1)... Agree (+5)
- 5) PBC5 - How practical is it for you to start you own business?: 1 (Disagree)...100 (Agree)

#### **4.9.4. Construct: Intention**

Autio et al.'s (2001) multi-item intention scale had successfully recorded a Cronbach's alpha coefficient of 0.82 (using z-scores to standardise measurement scales) when applied to their sample of MBA students from the London School of Business. Importantly, the measurement scale recorded the perceived likelihood of an individual starting a business on either a full-time or part-time basis within a period of one or five years from when the research was conducted. Gird and Bagraim (2008) later recorded a Cronbach's alpha coefficient of 0.7, which again illustrates the need for revised measurement scales, evidenced by the deterioration reliability coefficients.

The present study employed Autio et al.'s (2001) multi-statement measure comprised of four-item statements (hereafter referred to as individual measurement items), each measured on a scale ranging from +1 to +5. The scale wording was modified to replace the word 'firm' with 'business', a term more familiar within a South African context. Individuals who had recorded that they had 'already started a business' were thereafter excluded from the analysis for reasons detailed within the sampling methodology. All measurement items were thereafter standardised (z-score) and a Cronbach's alpha coefficient recorded to test for internal reliability. The construct would be calculated as the mean of the standardised scores for item combinations that yielded the largest internal reliability coefficient and would thereafter be referred to as the aggregate construct scale. The questions and coding for each of the aforementioned measurement items are detailed as follows:

For full-time occupation in own business:

- 1) INT1 - Start a business on a full-time basis within one year from now: Not at all likely (+1)... Very likely (+4)... Already started a firm (+5)
- 2) INT2 - Start a business on a full-time basis within five years from now: Not at all likely (+1)... Very likely (+4)... Already started a firm (+5)

For part-time occupation in own business

- 3) INT3 - Start a business on a part-time basis within one year from now: Not at all likely (+1)... Very likely (+4)... Already started a firm (+5)
- 4) INT4 - Start a business on a part-time basis within five years from now: Not at all likely (+1)... Very likely (+4)... Already started a firm (+5)

#### **4.10. Data Analysis Process**

The survey responses were imported into Microsoft Excel and visually inspected for any obvious errors relating to the data importation and coding. The resultant dataset was thereafter imported into IBM SPSS Statistics version 21 for further statistical analysis.

*Descriptive statistics* were conducted prior to commencing with any statistical analysis. According to Schwandt (2007), descriptive statistics are mathematical techniques used to organise, display and summarise numerical data. Further, these authors state that descriptive statistics can include the measure of central tendency such as means, medians and mode; and measures of variability such as

standard deviation. This analysis provided important insight into the data composition before commencing with the initial screening process in the following sections.

*Outlier analysis* was performed to identify extreme cases that could interfere with subsequent statistical analysis. Outliers according to Weiers (2010) are data values that are very different from other values within their dataset; these authors explain that if the outliers are not remedied, then the statistical results and conclusions could be significantly misrepresented. A Box-and-Whiskers plot representing the standardised (z-score) individual measurement items was employed as the univariate method for outlier detection. This approach according to Rodriguez (2007) is particularly useful for investigating the symmetry of a distribution and to detect any inconsistent values and outliers.

A principle components analysis with varimax techniques of rotation was thereafter performed on all standardised individual measurement items (before they were aggregated) to validate scale *dimensionality*. PCA is multivariate data analysis to reduce the dimensionality of data sets and simplify the representation of the data under consideration (Salkind, 2010b). These authors explain that PCA assists with validity confirmation that allows one to determine which items are working against each other and possibly not measuring the same intended construct.

A Pearson product-moment *correlation* was performed for all individual measurement items to determine the extent to which items were correlated among

each other. According to Bagiella (2008), the Pearson-moment correlation coefficient is a measure of the strength of the linear relationship between two continuous variables and allows for an individual to make accurate prediction about one variable using another. This exercise served to support the findings from the principle components analysis detailed in the previous paragraph.

Cronbach's alpha coefficients were calculated for all individual measurement items in an attempt to demonstrate scale *reliability*. Individual item measures were then combined into an aggregate construct scale based on the outcome of the reliability test.

According to Segrin (2010) *Normality, linearity and homoscedasticity* are important prerequisites for a multiple linear regression analysis. Aggregate construct scales were thus visually inspected to confirm that the data was mound shaped and in doing so approximately normally distributed. This approach, according to University of Northern Iowa (2010) is acceptable because the unitary measurement for Likert scales is not continuous in nature and therefore cannot strictly possess a normal probability distribution. Scatterplots were thereafter used to visually assess for the linear relationship between the dependent variable and each its predictor variables. Finally, homoscedasticity (antonym heteroscedasticity) which suggests equal levels of variability between a quantitative dependent variable across a range of independent variables (Fay, 2010) was measured using a Breusch-Pagan test for Heteroscedasticity.

A Pearson product-moment *correlation* was thereafter performed for all aggregate construct scales to determine the extent to which items were correlated among each other. This correlation analysis was particularly important to identify strong associations between independent variables that would inform a test for the presence of *multicollinearity*. According to Gebotys (2010), multicollinearity exists when independent variables are highly correlated with each other. Further, these authors caution that if the degree of multicollinearity is not reduced, then statistical results could include large standard errors, wide confidence intervals and nonsignificant or incorrect t-statistics.

According to Pearson (2010), the degree of multicollinearity can be measured with a tolerance and variance inflation factor (VIF) test reported within SPSS. These authors explain that tolerance is a measure of the amount of variance of each independent variable that is not explained by other variables in the equation  $1-R^2$ . Further, VIF is explained to be an alternative approach and is measured as a function of tolerance, represented as by  $1/(1-R^2)$ . A rule of thumb for their interpretation suggests that if tolerance is 0.10 or less, or if the VIF is 10 or greater, then one could have a problem of multicollinearity.

Upon conclusion of the preceding sections, the researcher could then proceed to address hypothesis 1 and 2. Revisiting the research design, a multiple regression analysis was used to test hypothesis 1 that aimed to confirm the TPB as a statistically significant predictor of entrepreneurial intention. Hypothesis 2 on the

other hand employed a hierarchical regression analysis and aimed to confirm the sufficiency of the TPB as predictor of entrepreneurial intention.

#### **4.11. Limitations**

The cross sectional design of the present study precludes a longitudinal design that may have determined causality (Sutherland & Jordaan, 2004). Further, these authors claim that due to the nature of non-probability samples, one cannot say with certainty the extent to which the sample is representative of the population. In addition, the sample excludes individuals who are currently not formally employed and therefore the findings cannot be generalisable to this segment of the population. Further, this limitation is an unfortunate consequence of attempting to include mature (older) individuals who were facing vocational decisions. These individuals have a higher propensity to already be in full-time employ.

## **5. RESULTS**

### **5.1. Introduction**

The previous chapter discussed the research methodology employed for this study. This chapter serves to present the results from the statistical analysis. Descriptive statistics were conducted on the sample detailing the number of participants, gender, racial group, employment sector, industry, participant age, years of experience and number to direct reports. Thereafter, initial screening was conducted which comprised of outlier analysis, a test for dimensionality using principle components analysis, correlation analysis for individual measurement items, followed by tests for internal reliability, regression assumptions and lastly a correlation analysis for the aggregate construct scale. A multiple regression analysis was thereafter performed to test hypothesis one, followed by a hierarchical regression analysis for hypothesis two and three.

### **5.2. Descriptive Statistics**

One hundred and seventy nine participants completed the questionnaire of which 134 satisfied the criterion of being formally employed and not engaged with entrepreneurial activity at the time of the survey capture. Two participants of the 134 failed to complete the entire questionnaire and were excluded from the analysis going forward. A total of 132 cases were then used within all subsequent analysis. The sample composition was detailed for gender, racial group,

employment sector, industry, age, years of experience; and number of direct reports.

Thirty three percent of respondents were female and 67% male; The sample represented a broad range of racial groups with the two dominant categories being Black and White, the former representing 38% and the latter, 42%. Indians comprised of 12% with Asian and Coloured groups both at 4%. Fifteen percent of respondents were employed within the public sector, implying that the vast majority of respondents, totalling 85% were operating within the private sector of SA (see Table 5-1)

**Table 5-1 Descriptive Statistics: Gender, Racial Group, and Employment Sector**

	Frequency	Percent	Cumulative Percent
Female	44	33.3	33.3
Male	88	66.7	100
Total	132	100	

Asian	5	3.8	3.8
Black	50	37.9	41.7
Coloured	5	3.8	45.5
Indian	16	12.1	57.6
White	55	41.7	99.2
Other	1	0.8	100
Total	132	100	

Public	21	15.9	15.9
Private	111	84.1	100
Total	132	100	

Respondents worked in all industry groups as defined by (StatsSA., 2013) with predominant industries being finance at 41% and manufacturing at 15%. A sum total of 34% were evenly spread across construction, medical, mining, retail, transport and utilities. Finally, 42% of participants were categorised as 'other' which according to the survey feedback accommodated a large percentage of consultants. Participant ages ranged from 27 to 52 with a mean of 33.94 and a standard deviation of 5.129. The years of experience ranged from 4 to 26, with a mean of 11.23 and a standard deviation of 5.205; and lastly the number of employees reporting into the respondent (representing the level of responsibility) ranged from 0 to 26 with a mean of 6.27 and standard deviation of 7.204 (see Table 5-2 and Table 5-3)

**Table 5-2 Descriptive Statistics: Industry**

	Frequency	Percent	Cumulative Percent
Construction	6	4.5	4.5
Finance	41	31.1	35.6
Manufacturing	15	11.4	47.0
Medical	3	2.3	49.2
Mining	8	6.1	55.3
Retail	6	4.5	59.8
Transport	7	5.3	65.2
Utilities	4	3.0	68.2
Other	42	31.8	100.0
Total	132	100.0	

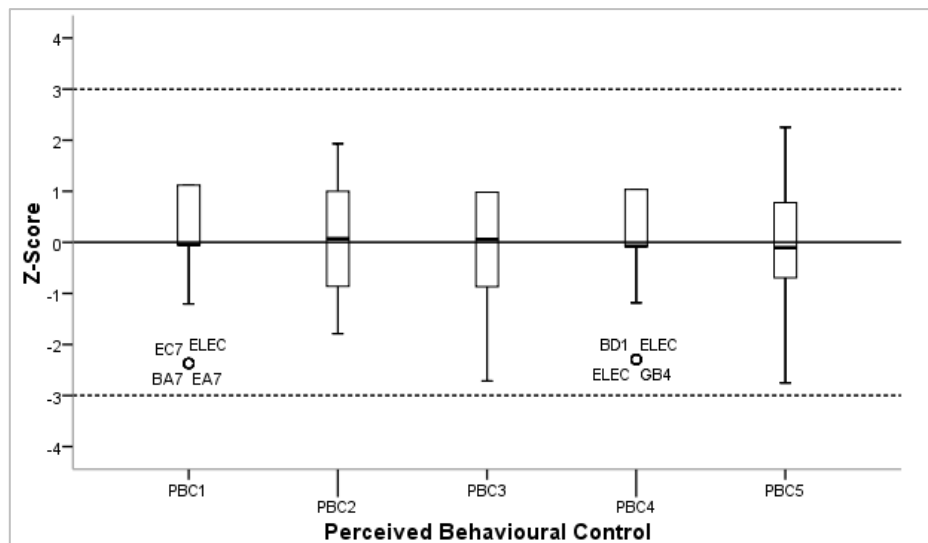
**Table 5-3 Descriptive Statistics: Age, Years of Experience, Number of Direct Reports**

	N	Minimum	Maximum	Mean	Std. Deviation
AgeYears	132	27	52	33.94	5.129
Years of formal employment experience	132	4	26	11.23	5.205
Number of direct reports into you	132	0	26	6.27	7.204

### 5.3. Initial Screening

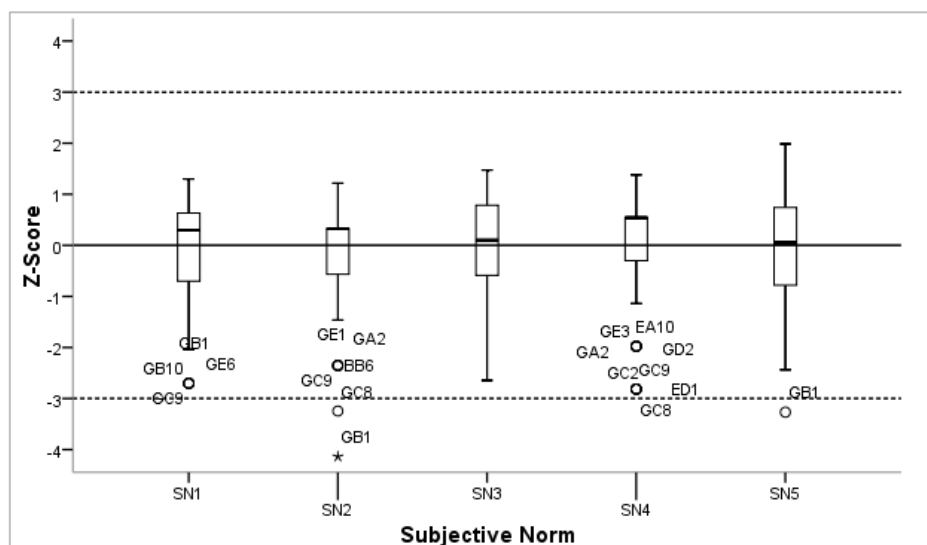
#### 5.3.1. Outlier Analysis - Individual Measurement Items

Univariate analysis of the standardised (z-score) individual measurement items provided the opportunity to identify observations that fell beyond the extremity of three standard deviations from the mean. All subjects within each individual measurement item (from PBC1 to PBC5) for perceive behavioural control were reported to fall within three standard deviations and were therefore not considered to be a significant outlier (see Figure 5-1).



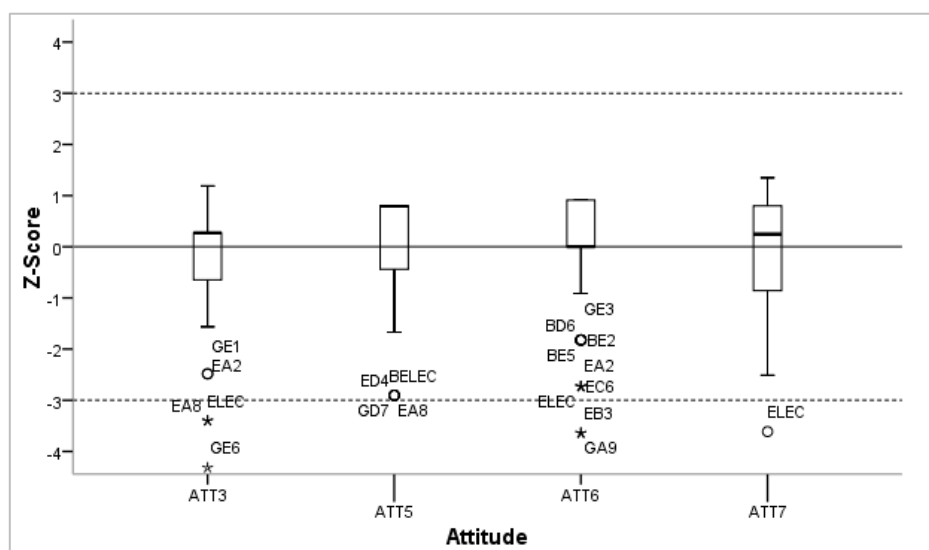
**Figure 5-1 Boxplot Outlier Analysis: Perceived behavioural control**

Repeating the process for subjective norm, revealed two cases in total across individual measurement items (SN2 and SN5) that breached the three standard deviations from the mean threshold (see Figure 5-2). Both cases were individually analysed and it was concluded that the respondents were consistent in their ratings across all individual measurement items for subjective norm. To validate the potential impact of their exclusion, the cases were temporarily excluded from the sample and the process of creating standardised scores (z-score's) and boxplots was repeated. The outcome demonstrated that each iteration yielded more items that fell beyond the acceptable range and lead one to conclude that the repetitive process would ultimately erode the sample size to an extent that all variability would be removed from the sample data. Based on the findings, it was decided to retain both cases and continue with further analysis.



**Figure 5-2 Boxplot Outlier Analysis: Subjective norm**

Following on, five cases in total across individual measurement items (ATT3, ATT5, ATT6 and ATT7) for attitude breached the three standard deviations from the mean threshold and were thereafter individually analysed to rule out potential data anomalies (see Table 5-3). The findings were similar to those presented for subjective norm, concluding that respondents were consistent in their ratings across individual measurement items. In the interest of conserving sample size and variability within the data, it was decided to retain all five cases.



**Figure 5-3 Boxplot Outlier Analysis: Attitude**

Finally, three subjects within an individual measurement item (INT4) for intention fell beyond the three-standard-deviation from the mean threshold and were thereafter individually analysed to rule out potential data anomalies. The findings once again were similar to those presented for subjective norm, concluding that

respondents were consistent in their ratings across individual measurement items. In the interest of conserving sample size and variability within the data, it was decided to retain all three cases and proceed with further statistical analysis (see Figure 5-4)

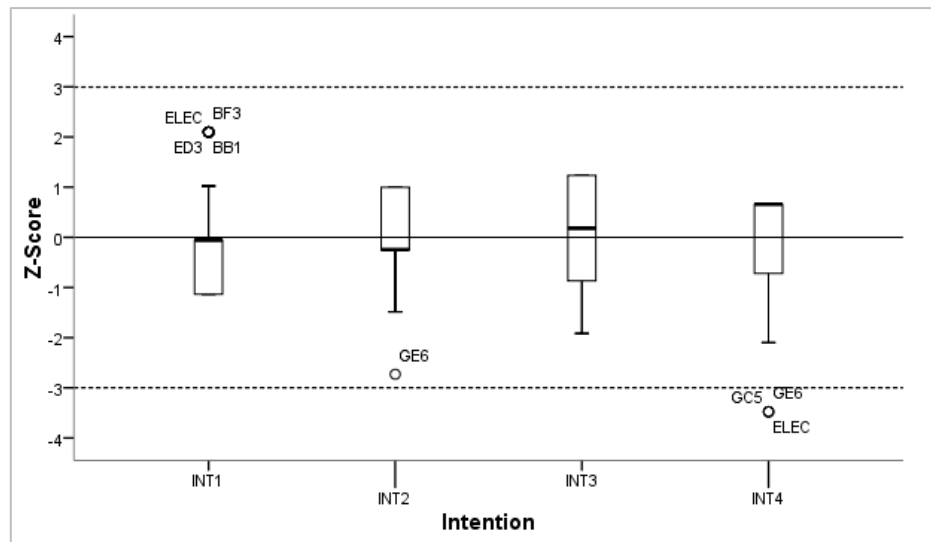


Figure 5-4 Boxplot Outlier Analysis: Intention

### 5.3.2. Dimensionality - Individual Measurement Items

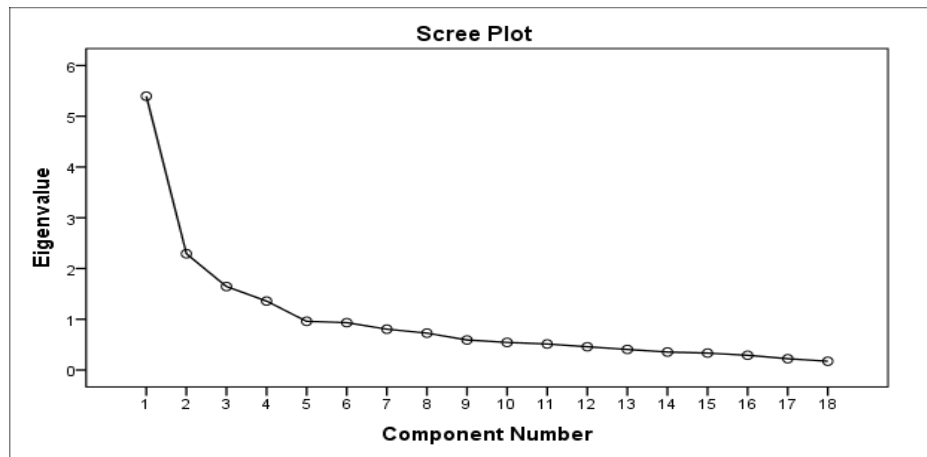
All individual measurement items were entered into a principle components analysis with varimax techniques of rotation (Lewicki & Hill, 2006). The Kaiser-Meyer-Olkin test of sampling adequacy recorded 0.80 which is markedly higher than the minimum requirement of 0.6 necessary to continue with principle components analysis (Salkind, 2010b). Further, Bartlett's test of Sphericity recorded a significance of 0.000 which is less than 0.05, serving to confirm that

principle components analysis may a suitable analysis to employ (Salkind, 2010b) (see Table 5-4).

**Table 5-4 KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
	Approx. Chi-Square	923.925
Bartlett's Test of Sphericity	df	153
	Sig.	.000

The scree plot output as presented in Figure 5-5 suggests that the first four components extract the most variance within the model. According to Lewicki and Hill (2006) a scree plot is a graphical representation of eigenvalues (i.e. the amount of variance extracted by the components) and serves as a means to identify the point at which an increase in the number of eigenvalues represented on the x-axis appears to level off (working from left to right hand side) (Cattell, 1966). These authors explain that the marginal cost of additional components beyond this point exceeds the marginal benefit of the variance explained.



**Figure 5-5 Scree Plot: Principle Components Analysis**

The component analysis as presented in Table 5-5, demonstrated that *most* individual measurement items were suitably measuring the same underlying construct. Three individual measurement items for perceive behavioural control (PBC1, PBC4 and PBC5) produced sufficient loadings on component two suggesting that the remaining two attributes (PBC2 and PBC3) were not adequately measuring the same latent construct. It was therefore decided to disqualify both PBC2 and PBC3 as valid individual measurement items, eligible for aggregate construct scale calculation going forward.

All individual measurement items for subjective norm loaded with significant weightings on component one. SN5 (0.625) presented the lowest component loading and was markedly different from SN1 to SN4 which ranged from 0.739 to 0.846 respectively. Despite the large differential, it was decided to retain SN5 as a valid individual measurement item, eligible for aggregate construct scale calculation going forward.

Similarly, all items for attitude and Intention loaded with significant weightings on component three and four respectively. Although there was a large differential between the smallest and largest loadings in both components, the smallest values of 0.471 for INT4 and 0.527 for ATT3 according to Salkind (2010a) are acceptable. These authors claim that there are three approaches to determine if a loading is significant; one could either employ a cut-off value; apply a t-test, or lastly a confidence interval. They go on to explain that the latter two options are not

commonly seen in applied research and that researchers have gravitated toward an arbitrarily cut off set at 0.4. In light of the aforementioned, it was decided to retain INT4 and ATT3 as valid individual measurement items eligible for aggregate construct scale calculation going forward.

**Table 5-5 Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
<b>Zscore: PBC1</b>	.072	<b>.756</b>	-.133	.187
Zscore: PBC2	.312	.288	-.190	.429
Zscore: PBC3	.028	.318	.516	.189
<b>Zscore: PBC4</b>	.128	<b>.700</b>	.156	.086
<b>Zscore: PBC5</b>	.237	<b>.651</b>	.195	.247
<b>Zscore: SN1</b>	<b>.739</b>	.265	.012	.031
<b>Zscore: SN2</b>	<b>.829</b>	.088	.148	-.008
<b>Zscore: SN3</b>	<b>.739</b>	-.098	.133	.110
<b>Zscore: SN4</b>	<b>.846</b>	.129	.072	.052
<b>Zscore: SN5</b>	<b>.625</b>	.379	.275	.091
<b>Zscore: ATT3</b>	.238	.472	<b>.527</b>	.109
<b>Zscore: ATT2</b>	.321	-.098	<b>.726</b>	-.001
<b>Zscore: ATT6</b>	.146	.068	<b>.745</b>	.071
<b>Zscore: ATT7</b>	.012	.642	<b>.601</b>	.014
<b>Zscore: INT1</b>	.132	.169	-.026	<b>.731</b>
<b>Zscore: INT2</b>	-.009	.261	.298	<b>.661</b>
<b>Zscore: INT3</b>	.016	.019	.161	<b>.769</b>
<b>Zscore: INT4</b>	-.079	.024	.519	<b>.471</b>

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 6 iterations.

### 5.3.3. Correlation Analysis - Individual Measurement Items

A Pearson's correlation analysis was performed to record the strength of association between individual measurement items (see Table 5-6). Results

indicate that the strength of associations among individual measurement items PBC1 to PBC5 were relatively weak, corroborating their poor component loadings from the principle components analysis. Statistically significant associations among PBC1 to PBC5 were highlighted in red thereby providing a visual representation of the extent to which items were strongly related.

All other individual measurement items namely SN1 to SN5, ATT3 and ATT5 to ATT7; and INT1 to INT4, largely demonstrated a strong and statistically significant association among the individual measurement items within each of their latent construct groups (namely perceived behavioural control, subjective norm and attitude). These associations can be visually inspected by referring to the red highlighted cells for their respective groups.

Further, associations could be observed for individual measurement items between construct groups, for example PBC2 to PBC5 being significantly correlated with ATT3, ATT5, ATT6 and ATT7 (this illustrated by the blue highlighted cells). Importantly, for purposes of this study, one would want to observe associations with items belonging to intentions, namely INT1 to INT4. Despite the overall consensus supporting a high degree of association within and between particular construct groups, results show that the individual measurement items for subjective norm have an extremely weak and non-significant association and with individual measurement items from the intentions construct.

**Table 5-6 Pearson's Correlation: Individual Measurement Items**

		PBC1	PBC2	PBC3	PBC4	PBC5	SN1	SN2	SN3	SN4	SN5	ATT3	ATT5	ATT6	ATT7	INT1	INT2	INT3	INT4
PBC Scale	PBC1	1																	
	PBC2	.375**	1																
	PBC3	.167	.075	1															
	PBC4	.450**	.147	.216*	1														
	PBC5	.372**	.242**	.299**	.409**	1													
SN Scale	SN1	.223*	.273**	.120	.263**	.368**	1												
	SN2	.173*	.231**	.126	.229**	.247**	.552**	1											
	SN3	.029	.149	.062	.135	.159	.426**	.486**	1										
	SN4	.136	.236**	.242**	.219*	.306**	.549**	.692**	.601**	1									
	SN5	.191*	.242**	.297**	.304**	.513**	.511**	.549**	.361**	.589**	1								
ATT Scale	ATT3	.371**	.131	.367**	.448**	.342**	.341**	.311**	.223*	.276**	.420**	1							
	ATT5	-.041	.075	.199*	.102	.117	.235**	.362**	.289**	.191*	.316**	.396**	1						
	ATT6	.057	.110	.315**	.170	.262**	.153	.242**	.181*	.157	.229**	.370**	.540**	1					
	ATT7	.317**	.114	.489**	.425**	.607**	.149	.083	.088	.150	.481**	.524**	.366**	.462**	1				
INT Scale	INT1	.227**	.272**	.171	.178*	.324**	.135	.077	.198*	.135	.205*	.189*	.066	.112	.178*	1			
	INT2	.243**	.265**	.338**	.339**	.343**	.055	.080	.122	.085	.222*	.284**	.231**	.259**	.348**	.497**	1		
	INT3	.129	.196*	.219*	.121	.286**	.124	.047	.015	.082	.192*	.229**	.071	.139	.111	.391**	.363**	1	
	INT4	.115	.061	.303**	.214*	.184*	-.012	.067	.079	.048	.135	.361**	.226**	.287**	.243**	.117	.345**	.453**	1

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

\* . Correlation is significant at the 0.05 level (2-tailed).

#### **5.3.4. Scale Reliability - Individual Measurement Items**

Cronbach's alpha coefficients were calculated for all individual measurement items pertaining to each latent construct. The statistic records an alpha coefficient for all possible combinations of individual measurement items per latent construct (see Table 5-7). The researcher then chose the individual measurement item combination that yielded the maximum alpha coefficient for inclusion in the aggregate construct scale calculation.

PBC1, PBC4 and PBC5 representing perceived behavioural control recorded an alpha at 0.676. Similarly, SN1 to SN5 representing subjective norm recorded alpha at 0.850. ATT3, ATT5 to ATT7 representing attitude recorded alpha at 0.761 and lastly, INT1 to INT4 representing intention recorded alpha at 0.693. According to George and Mallery (2003), the following rules of thumb can be applied to interpret Cronbach's alpha: Alpha > .9 = Excellent, Alpha > .8 = Good, Alpha > .7 = Acceptable, Alpha > .6 = Questionable, Alpha > .5 = Poor, and Alpha < .5 = Unacceptable.

**Table 5-7 Scale Reliability: Individual Measurement Items**

Scale Code	Scale Origin	Standardised Cronbach's Alpha	Number of Items
Perceived behavioural control:			
PBC1234	Using Autio (2001) standardised scale	.556	4
PBC12345	Using Autio (2001) and Krueger (2000) standardised scale	.655	5
PBC145	Using Krueger (2000) and reduced Autio (2001) standardised scale	.676	3
Subjective norm:			
SN1234	Using Autio (2001) scale	.831	4
Z_SN1234	Using Autio (2001) standardised scale	.831	4
Z_SN12345	Using Autio (2001) and Krueger (2000) standardised scale	.850	5
Attitude:			
Z_ATT356	Using Autio (2001) scale	.698	3
Z_ATT3567	Using Autio (2001) and Krueger (2000) standardised scale	.761	4
Intentions:			
ZINT1234	Using Autio (2001) scale	.693	4

George and Mallery (2003) provide the following rules of thumb for interpreting Cronbach's alpha: " $\geq 0.9$  (Excellent),  $\geq 0.8$  (Good),  $\geq 0.7$  (Acceptable),  $\geq 0.6$  (Questionable),  $\geq 0.5$  (Poor) and  $< 0.5$  (Unacceptable)" (p. 231).

### 5.3.5. Regression Assumptions - Aggregate Construct Scale

Aggregate construct scales were visually inspected and confirmed to mound shaped, thus confirming the assumption of normality (see Appendix A). Similarly, linearity was confirmed through visual inspection of the scatterplot for dependent and independent variables (see Figure 5-6, top three cells). Thereafter, the Breusch-Pagan test for heteroscedasticity recorded a Chi-squared statistic of 1.231 at a significance of 0.745, failing to reject the null hypothesis that suggests homogeneity. The assumption of homoscedasticity was thus satisfied.

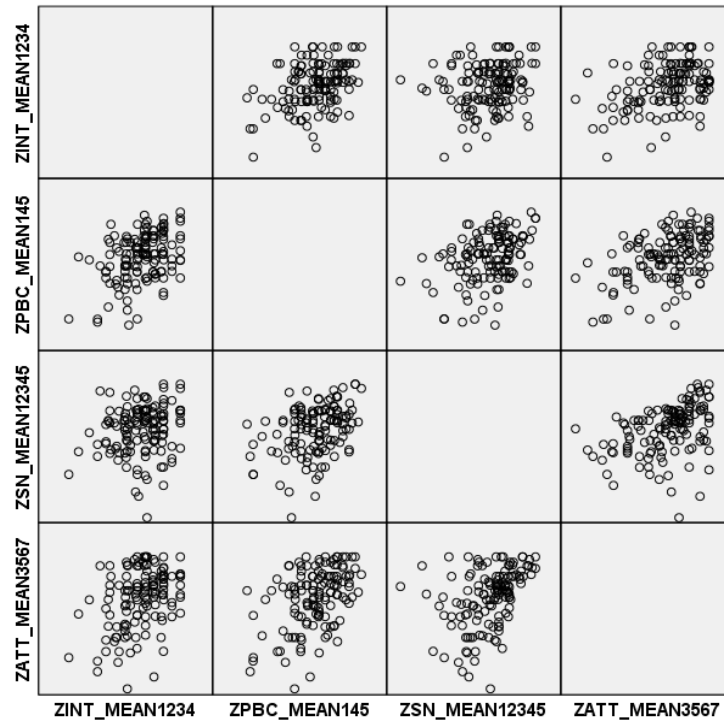


Figure 5-6 Scatterplot: Regression Assumptions - Linearity

### 5.3.6. Correlation Analysis - Aggregate Construct Scales

Individual measurement items were thereafter combined into aggregate construct scales each representing their respective construct. A correlation analysis was performed to record the strength of association between the newly established scales and was reported in Table 5-8. Results largely demonstrate a strong significant association among these scales; and of particular importance with intentions. With the exception of subjective norm measuring  $r = 0.183$ ,  $p < 0.05$ , Perceived behavioural control ( $r = 0.401$ ,  $p < 0.01$ ) and attitude ( $r = 0.379$ ,  $p < 0.01$ ) were found be strongly associated with the intention aggregate construct scale.

**Table 5-8 Pearson's Correlation: Aggregate Construct Scales**

Pearson Correlation	ZPBC_MEAN145	ZSN_MEAN12345	ZATT_MEAN3567	ZINT_MEAN1234
ZPBC_MEAN145	1			
ZSN_MEAN12345	.378**	1		
ZATT_MEAN3567	.445**	.404**	1	
ZINT_MEAN1234	.401**	.183*	.379**	1

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

\* . Correlation is significant at the 0.05 level (2-tailed).

In light of the significant association between independent variables (PBC, SN and ATT), it was important to measure the degree of multicollinearity before commencing with parametric modelling. The independent variables were regressed against each other and their resultant tolerance and variance inflation factors recorded under the collinearity statistics within Table 5-9. The tolerance statistics were all reported as being greater than 0.1 which suggests a relatively low presence of multicollinearity and therefore suitable to continue with further analysis.

**Table 5-9 Multicollinearity: Regressing independent variables on each other**

Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.003E-013	.064		.000	1.000		
1ZPBC_MEAN145_ORIG	.234	.088	.224	2.675	.008	.891	1.122
ZATT_MEAN356_ORIG	.320	.086	.310	3.696	.000	.891	1.122

a. Dependent Variable: ZSN\_MEAN1234\_ORIG

Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-1.004E-013	.062		.000	1.000		
1ZPBC_MEAN145_ORIG	.232	.085	.229	2.742	.007	.893	1.119
ZSN_MEAN1234_ORIG	.300	.081	.309	3.696	.000	.893	1.119

a. Dependent Variable: ZATT\_MEAN356\_ORIG

Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.002E-013	.063		.000	1.000		
1ZSN_MEAN1234_ORIG	.224	.084	.234	2.675	.008	.853	1.173
ZATT_MEAN356_ORIG	.237	.086	.240	2.742	.007	.853	1.173

a. Dependent Variable: ZPBC\_MEAN145\_ORIG

#### 5.4. Results for Hypothesis 1

##### **The TPB is a statistically significant predictor of entrepreneurial intention.**

Intention was regressed against the perceived behavioural control, subjective norm and attitude aggregate construct scales. The resultant model recorded an  $R^2 = 0.211$  which can be interpreted as explaining 21.1% of the variation in intention (See Table 5-10). Table 5-11 demonstrates that the model as a whole is deemed to be statistically significant, recording an F-statistic of 11.438 at a significance of 0.000.

Closer investigation of the standardised beta coefficients demonstrated that perceived behavioural control (beta = 0.298, sig = 0.001) exerted the strongest

influence on intention among attitude ( $\beta = 0.260$ ,  $\text{sig} = 0.005$ ) and subjective norm ( $\beta = -0.034$ ,  $\text{sig} = 0.698$ ) (see Table 5-12). Importantly, subjective norm was not found to be statistically significant and therefore did not contribute to the predictive ability of the TPB regression model. In light of the reported findings, it seems reasonable to suggest that Hypothesis 1 is confirmed.

**Table 5-10 Regression: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.460 <sup>a</sup>	.211	.193	.64837

a. Predictors: (Constant), ZATT\_MEAN3567, ZSN\_MEAN12345, ZPBC\_MEAN145

**Table 5-11 Regression: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	14.425	3	4.808	11.438	.000 <sup>b</sup>
Residual	53.809	128	.420		
Total	68.234	131			

a. Dependent Variable: ZINT\_MEAN1234

b. Predictors: (Constant), ZATT\_MEAN3567, ZSN\_MEAN12345, ZPBC\_MEAN145

**Table 5-12 Regression: Coefficients<sup>a</sup>**

	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	1.01E-13	0.056		1
ZPBC_MEAN145	0.276	0.084	0.298	0.001
ZSN_MEAN12345	-0.031	0.081	-0.034	0.698
ZATT_MEAN3567	0.246	0.087	0.260	0.005

Dependent Variable: ZINT\_MEAN1234<sub>a</sub>

## 5.5. Results for Hypothesis 2

**Demographic variables will not add predictive ability to the TPB when predicting entrepreneurial intent.**

A hierarchical regression was performed to record the marginal benefit derived from the addition of demographic variables to the TPB. The change in  $R^2$  explained 6.9% more of the total variation in intentions (new  $R^2 = 0.281$ ) as indicated in Table 5-13. The result is statistically significant (Sig.  $F = 0.022 < 0.05$ ) and is thus deemed to add to the explanatory power of the initial model. Table 5-14 demonstrates that the model as a whole, comprised of TPB and demographic variables is deemed to be statistically significant, recording an F-statistic of 6.912 at a significance of 0.000

**Table 5-13 Hierarchical Regression: TPB and Demographic Variables**

Step	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.460 <sup>a</sup>	.211	.193	.64837	.211	11.438	3	128	.000
2	.530 <sup>b</sup>	.281	.240	.62915	.069	2.985	4	124	.022

a. Predictors: (Constant), ZATT\_MEAN3567, ZSN\_MEAN12345, ZPBC\_MEAN145

b. Predictors: (Constant), ZATT\_MEAN3567, ZSN\_MEAN12345, ZPBC\_MEAN145, AGE, GENDER\_GLOB, RACE\_GLOB\_B, RACE\_GLOB\_W

**Table 5-14 Hierarchical Regression: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.151	7	2.736	6.912	.000 <sup>c</sup>
Residual	49.083	124	.396		
Total	68.234	131			

a. Dependent Variable: ZINT\_MEAN1234

Following on, the standardised beta coefficients for the combined model demonstrates that perceived behavioural control (beta = 0.362, sig = 0.000) once again exerts the strongest influence over all other variables. However, an important observation within this iteration is that the attitude variable (beta = 0.196, sig = 0.033) is surpassed by the racial group variable RACE\_GLOB\_B (beta = 0.216, sig = 0.039) representing black individuals. Subjective norm (beta = -0.093, sig = 0.296) together with other demographic variables namely AGE (beta = 0.007, sig = 0.926), GENDER (beta = -0.012, sig = 0.880) and remaining racial groups (beta = -0.08, sig = 0.443) were not statistically significant and therefore failed to add predictive ability to the TPB regression model (see Table 5-15). In light of the reported findings, it seems reasonable to suggest that Hypothesis 2 is confirmed.

**Table 5-15 Hierarchical Regression: Coefficients<sup>a</sup>**

	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	-0.095	0.385		0.805
ZPBC_MEAN145	0.335	0.084	0.362	0.000
ZSN_MEAN12345	-0.085	0.081	-0.093	0.296
ZATT_MEAN3567	0.186	0.086	0.196	0.033
GENDER_GLOB	-0.018	0.121	-0.012	0.880
RACE_GLOB_B	0.320	0.153	0.216	0.039
RACE_GLOB_W	-0.117	0.151	-0.080	0.443
AGE	0.001	0.011	0.007	0.926

a. Dependent Variable: ZINT\_MEAN1234

## **6. DISCUSSION**

### **6.1. Introduction**

The previous chapter served to present the results from the statistical analysis. In this chapter, the findings of the research in relation to the research questions will be discussed.

The research questions and hypotheses were developed from the propositions that centred on a dominant theme within the literature. This theme was: approaches to predicting entrepreneurial activity and ranged from trait to demographic to psychological (intentional models) models. The research used a mono method design with quantitative techniques of analysis applied to a cross-sectional study sample.

Data gathering was achieved through survey questionnaires and were used to validate the constructs identified within the literature. The purpose of the research was to test the significance of a theoretical framework within a specific contextual setting. The data analysis process was therefore designed to address and answer all two hypotheses in hope to achieve the intended research objective.

### **6.2. Discussion of Hypothesis 1**

**The TPB is a statistically significant predictor of entrepreneurial intention.**

The TPB regression model as a whole comprised of perceived behavioural control, subjective norm and attitude explained 21.1% of the variation in intention. This result confirms much of the findings from prior research but it is

worth noting that the explanatory power of the model is markedly lower than results from prior research. Recapping, Tkachev and Kolvereid (1999) recorded an  $R^2 = 0.45$ ; Krueger et al.'s (2000)  $R^2 = 0.35$ ; Autio et al.'s (2001)  $R^2 = 0.214$  for their Swedish sub-group and 0.353 for the USA group; Van Gelderen et al.'s (2008)  $R^2 = 0.38$  and finally Gird and Bagraim's (2008)  $R^2 = 0.27$ . These findings potentially confirm statistics from the GEM report (Turton & Herrington, 2012) stating that SA's rate of entrepreneurial intention at 14% is markedly lower than the average of 27% for efficiency driven economies. Alternatively it could simply imply that the TBP's antecedent variables are less important predictors of entrepreneurial intention within a South African context.

Results for the antecedent variables show that perceived behavioural control significantly influences intentions beyond the contribution of subjective norm and attitude. Perceived behavioural control as measured by the standardised beta coefficients of the regression output recorded a beta of 0.298 at significance level of 0.00. This result was expected given the strong and significant bivariate correlation with intentions. Once again, the significant beta weighting is not an uncommon findings within prior research (Autio et al., 2001; Kolvereid, 1996; Krueger et al., 2000; Tkachev & Kolvereid, 1999; Van Gelderen et al., 2008); it demonstrates that the degree of perceived control over the behaviour for the population represented within this study is more important than subjective norm and attitude in predicting entrepreneurial intentions.

Subjective norm on the other hand failed to contribute to the predictive ability of the global model (beta = -0.034, sig = 0.698). The finding once again was not surprising as the bivariate correlation with intention as explained in chapter 5

was reported to be weak. Similar findings have been recorded within prior studies (Autio et al., 2001; Krueger et al., 2000) and in large there seems to be little agreement on the significance of subjective norm as valuable contributor to the TPB. Some studies go as far as suggesting that in its absence, the remaining variables are synonymous with those within the SEE (Shapero's Entrepreneurial Event model) (Krueger et al., 2000) and therefore question the relevance of the TPB.

Interestingly, the samples within these studies comprised of participants who were likely more mature (measured in age) than the undergraduate participants typically employed within most other intentional oriented studies. More specifically, Krueger et al. (2000) refers to senior business students with a broad range of experiences, intentions and attitudes toward entrepreneurship. Autio et al. (2001) on the other hand does not provide insight into the average age of their MBA participants, but one could postulate that at a post graduate level, individuals are likely to have developed a greater degree of critical reasoning and are less likely to act upon a decision based on social pressure from referent groups. If this is in fact the case, then one should find that subjective norm is negatively correlated with age and would therefore have less of an influence on intention for older individuals.

The attention construct on the other hand was found to have a statistically significant influence on intentions. The relative strength of the variable as measured by the standardised beta coefficients of the regression output recorded a beta of 0.260 at a significance level of 0.005. Attitudes therefore ranked second to perceived behavioural control and higher than subjective

norm. Once again this finding is not dissimilar to prior studies (Autio et al., 2001; Kolvereid, 1996; Krueger et al., 2000; Tkachev & Kolvereid, 1999) where the attitude variable demonstrated the second most predictive influence on entrepreneurial intention. On the other hand, in a recent study Gird and Bagraim (2008) found that attitude was significantly more predictive than PBC and concluded that their participants were less perturbed about their ability to start a business or the opinions of important referents with regard to new venture creation. Reflecting on the earlier argument relating to participants age; their findings could likely be a consequence of a sample comprised of younger participants. Younger participants may not have developed their critical reasoning to the extent that the risks and reward consequences of entrepreneurship are thoroughly understood.

In summary, two of the TPB antecedent variables significantly explained variations in intentions. Subjective norm representing the third antecedent variable failed to provide any statistically significant contribution the theory. Similar findings in prior studies have lead researchers to question if their results disconfirm the TPB; however Ajzen (2011) explains that the relative importance of each component within the theory is expected to vary across behaviours and situations. Therefore in some applications, attitude alone may have a significant impact on intentions; in others attitude and perceived behavioural control will demonstrate significant impact and finally in others, all three components namely attitude, subjective norm and perceived behavioural control are likely to make significant contributions. In light of this observation, we will

continue on the premise that the theory holds as a testable theory driven method.

In conclusion, the TPB and its antecedent variables as a whole explained a significant amount of the variation in intention. These findings were synonymous with those from prior research which serves as confirmatory support for the TPB as a significant predictor of entrepreneurial intention. In light of the aforementioned, hypothesis 1 is confirmed, concluding that the TPB is a significant predictor of the entrepreneurial intention.

### **6.3. Discussion of Hypothesis 2**

**Demographic variables will not add predictive ability to the TPB when predicting entrepreneurial intent.**

As a prelude to this section, Ajzen (1991) explains that a model that is sufficient contains all the important variables in the set of determinants and therefore accounts for all the non-error variance in the behaviour. It then stands to reason that if any other factor can be found to have a significant residual effect beyond the predictor variables within the TPB, then it would imply that there are other important factors that have not been accounted for within the theory.

Hypothesis 2 would be tested by adding demographic variables to the regression equation that already contained the theory's antecedent variables. To recap, the advantage of following this methodology is that it allowed for the researcher to observe the marginal gain (in explained variation) derived from the addition of demographics variables. The change in  $R^2$  from the addition of

demographic variables explained 6.9% more of the total variation in intentions at a significance of Sig. F = 0.022 < 0.05. This is a substantial finding because it suggests that the demographic variables have a significant residual effect beyond the predictor variables within the TPB.

A close inspection of the individual regression coefficients, demonstrate that RACE\_GLOB\_B (black individuals) is the only significant contributor for the block of demographic variables. This is a significant finding and is seemingly unique to the contextual setting of this research. Race (beta = 0.216, sig = 0.039) in this instance proves to have a stronger influence on intention than attitude (beta = 0.196, sig = 0.033) as measured by their standardised beta coefficients. To the researchers knowledge, there have been no studies pertaining to the TPB that demonstrates race to have a greater direct influence on intentions than any of the theory's antecedent variables.

Henley (2007) may offer an explanation for this finding, claiming that individual's "...who are members from minority groups are more likely to display entrepreneurial aspirations..." (p. 260). Hagen and Massachusetts Institute of Technology, Center for International Studies (1962) suggest a possible explanation for the relationship as being a consequence of discrimination and deprivation. Although black citizens of SA are not a minority group, they were subject to a system of racial segregation prior to 1994, whereby their rights were severely curtailed. Theorising, could social and economic exclusion have pushed black individuals to necessity-driven entrepreneurship and in doing so, have fostered an entrepreneurial disposition within the group?

Preisendörfer, Bitz, and Bezuidenhout (2012) claim that there is a lack of black entrepreneurship within SA which is likely explained by legacy constraints imposed on financial, human, cultural and social capital under the segregation regime. Their findings suggest that education plays an important role in improving ones perception of self-efficacy that serves as a catalyst for black entrepreneurial participation. Participants within this study are educated and in the process of completing an MBA program which is designed to equip students with an understanding of the business environment. That said, if education is the common denominator, then one would expect all racial groups within this study to have an equal entrepreneurial disposition and influence on intention. The result then leads one to believe that there are other factors influencing a greater entrepreneurial disposition above level of education.

The researcher postulates that the current economic environment within SA provides favourable opportunities for black individuals to engage in economic activity. Black economic empowerment is an example thereof, designed to redress the imbalances of the past by transferring more ownership, management and control of SA's financial and economic resources to the majority of its citizens (Nieman & Nieuwenhuizen, 2009), more specifically previously disadvantaged citizens. These authors go on to explain that black economic empowerment is a reality of doing business within SA and if one intends to do business with a government, parastatal or with a firm (or firms) doing business with these entities, then it would be necessary to transform ones business in order to maintain contracts into the future.

Recapping on the literature, Ajzen (1991) claims that the TPB captures the influence of external factors on intention through its predictor variables, namely perceived behavioural control, subjective norm and attitude. This author goes on to explain that opportunities available to an individual, contributes to ones perception of behavioural control. Supporters are thus likely to claim that the influence of race (more specifically the opportunities available to black individuals) is sufficiently captured within one of the TPB predictor variables. To validate these claims, each of the TPB predictor variables was regressed on the race variables and remaining TPB variables. Although the results prove that race (black individuals) is statistically significant, it is distinctly weaker when compared to the influence of race on intentions as measured by their standardised beta coefficients. This then confirms that the influence of race within the contextual setting of this research is not fully captured by the TPB predictor variables.

Following on and addressing the outcome for the remaining demographic variables; findings for age and gender are synonymous with prior studies having largely shown that gender (Davidsson, 1995; Kristiansen & Indarti, 2004; Tkachev & Kolvereid, 1999) and age (Gird & Bagraim, 2008; Kristiansen & Indarti, 2004) are not significant predictors of entrepreneurial intention. Gird and Bagraim (2008) on the other hand in a separate regression analysis of entrepreneurial intent on demographic variables, reported a statistically significant but extremely weak relationship with intentions. This weak association is likely due to the fact that demographics are thought only to influence intent through their effect on behavioural, normative, and control

beliefs (Ajzen, 1991). In light of the findings within this section, hypothesis 2 is not confirmed. Demographic variables could possibly add predictive ability to the TPB when predicting entrepreneurial intent within the context of an emerging economy.

#### **6.4. Conclusion**

Hypothesis 1 was supported, concluding that the TPB was a significant predictor of entrepreneurial intention. This finding was not dissimilar to those from prior research (Autio et al., 2001; Gird & Bagraim, 2008; Krueger et al., 2000; Tkachev & Kolvereid, 1999; Van Gelderen et al., 2008) and serves as confirmatory support for its broad applicability within a diverse range of contextual settings (e.g. applicability within developed and developing economies).

Hypothesis 2 was not supported as it was found that race (black individual) could possibly add to predictive ability to the TPB when predicting entrepreneurial intent. Although a significant finding, it remains unclear if being a black individual is more indicative of developing entrepreneurial intentions due to inherent characteristics or qualities; or if being black in SA provides opportunities created through economic privileges superior to those available to other racial groups. If one considers that prior research has found little evidence to support race as valid predictor (Ghazali, Ibrahim, & Zainol, 2012; Wang & Wong, 2004), it leads one to believe that the South African political intervention may have created a form of empowerment through favourable opportunities only available to a specific group of individuals. These

opportunities could make entrepreneurship an attractive form of employment for black individuals within SA.

In closing, this chapter served to discuss the result of the research in relation to the literature and the proposed hypotheses. Important findings were noted and possible explanations for their occurrence were proposed. The following chapter will serve to recap on the research objective and limitations of the study, thereafter highlighting the key findings and provide recommendation to for future research.

## **7. CONCLUSION**

### **7.1. Introduction**

The previous chapter served to discuss the results of the research in relation to the literature and hypotheses. The following chapter serves to recap on the research objectives; highlights the key findings in turn providing recommendations for key stakeholders. It then proceeds to recap on the research limitations and suggestions for future research before closing with concluding remarks.

### **7.2. Background and Objectives**

SA seems to be locked into a paradigm of poor economic output with no foreseeable end in plain sight. Despite optimistic goals set out within the national development plan, the unemployment trends seem to be immune to any form of intervention implemented to date. The country's employment practices are highly unsustainable, evidenced by the bloated public service sector and a private sector which has failed to positively contribute to employment growth since 1994. In light of these circumstances it is evident that an alternative source of job creation is of utmost importance for both individuals and commercial enterprise.

Entrepreneurship could be seen as the alternative source for new job creation within SA. Disappointingly however, findings from the GEM report suggest that the general level of intention to engage in entrepreneurial activity within SA is far below the average of other efficiency driven economies. If entrepreneurial intention is truly a precursor for entrepreneurial activity, then it goes without

saying that stakeholders should be interested with the factors that influence intentionality. The TPB according to Ajzen (1991) is widely reported to be a significant predictor of entrepreneurial intentions and offers the opportunity of using a testable, theory driven method to validate intentional oriented studies. If the theory is proven to be a significant predictor within a diverse range of contextual settings, then it could possibly be used as a frame work to tailor policy design that promotes the entrepreneurial agenda in the most efficient way possible.

With that said, the objective of the present study was to validate the TPB's applicability i.e. if the model was a significant predictor of intentions; and secondly to test its sufficiency i.e. are there any other factors that are more important in predicting intentions than those accounted for within the theory. The study targets subjects who are arguably older; hold more experience and who are more ethnically diverse than those in most prior research. Importantly, the study occurs within the context of a developing economy, and intends to combine construct measurement scales from two studies in an attempt to improve measurement reliability.

### **7.3. Summary of Key Findings**

The TPB was proven to be a significant predictor of entrepreneurial intention. An important finding was that the theory's antecedent variables failed to explain as much of the variation in intention when compared to priors studies. This likely corroborates claims that SA's level of entrepreneurial intention is below that of other efficiency driven economies. A closer look at the antecedent

variables shows that perceived behavioural control exerts the strongest influence on intention, followed shortly thereafter by attitude and finally, subjective norm failing to contribute to the prediction of entrepreneurial intentions.

Following on, demographic variables were found to have a significant residual effect beyond the predictor variables of the TPB and as such could suggest that the theory does not sufficiently predict intentions as expected. Upon closer inspection of the individual demographic variables, it became evident that race, in particular black individuals was the only statistically significant contributor among age, gender and other racial groups to the prediction of entrepreneurial intention.

This raised the question if being a black individual is more indicative of developing entrepreneurial intentions due to some inherent characteristic or quality; or if being a black individual in SA provides opportunities created through economic privileges superior to those available to other racial groups. The researcher postulates the South African political intervention may have empowered black individuals by creating favourable opportunities not available to individuals from other racial groups. These opportunities may have made entrepreneurship an attractive form of employment for the group within SA and are seemingly not captured by the TPB predictor variables as expected.

#### **7.4. Implications of Research Findings**

The implications of the research findings can broadly be categorised into three key areas namely public policy, educational institutions and performance management opportunities.

The TPB has proven to be a significant predictor of entrepreneurial intention within the context of an emerging economy. The implication for public policy makers is that entrepreneurship has to be perceived as both desirable and feasible before individuals can develop intentions to engage in entrepreneurial activity (Krueger et al., 2000). Gird and Bagraim (2008) suggest that the TPB can be used as a diagnostic tool to identify areas in need of development that could promote and in turn lead to an increase in entrepreneurial intention. Explained by means of an example; if it was known that non-black racial groups were not engaging in entrepreneurial activity then the TPB could be used as tool to determine if perceived behavioural control, subjective norm or attitude toward the behaviour were impeding their intentions. Appropriate measures could thereafter be implemented to address any adverse perception of entrepreneurship.

Implementation of these measures could settle within the educational system where academic programs should be designed to reduce the adverse perceptions of entrepreneurship. Autio et al. (2001) believes that the career preferences of university students can be influenced and that students tend to gravitate toward fashionable career options. It then stands to reason that if academic programs could be implemented at a primary and secondary

school level, then the act of entrepreneurship could be institutionalised as a legitimate career alternative from early childhood development. Finally, policy design is only effective if delivers what it intends to deliver. The TPB could thus be used as performance management tool to assess the efficiency of policy design and operational execution. Antecedent variables could be measured on a pre-test and post-test basis to observe improvements in attitudes toward entrepreneurship.

### **7.5. Research Limitations**

A review on the research limitations indicate that the cross sectional research design precludes a longitudinal design that may have determined causality (Sutherland & Jordaan, 2004). Further, the nature of the non-probability sampling technique prohibited the assertion that the sample is representative of the population. Similarly, although multiple regression analysis assumptions were largely achieved, the non-probabilistic sampling technique violated a multiple regression assumption and it was therefore advised to continue with caution. Importantly, the sample excludes individuals who are currently not formally employed and therefore the findings cannot be generalisable to this segment of the population. This limitation is an unfortunate consequence of accessing mature (older) individuals who are facing vocational decisions. It can be explained that older individuals have a higher propensity to already be employed in a formal capacity.

## **7.6. Suggestions for Future Research**

Future studies could focus on improving operational limitations as discussed in the preceding section, or attempt to build on the findings as presented within study. Firstly, one could improve on aggregate measurement scales. The study found that scale reliability in prior research had been deteriorating over recent years and as such, the researcher tried to incorporate measurement scales from multiple studies in an attempt to remedy. Unfortunately, results did not demonstrate any improvement and should be used as cue for future studies to develop and test new measurement scales.

Secondly, sampling could be extended to include full-time MBA students who would usually be unemployed at the point in time when the research is conducted. These individuals are unable to be formally employed as their study curriculum requires their full-time attendance throughout the traditional work week. The benefit of introducing these participants is that it would mitigate concerns regarding applicability to a broad spectrum of South African citizens, which in turn would strengthen the research findings.

Finally, findings from this research suggest that race (black individuals) present a significant influence in the prediction of entrepreneurial intentions. Future studies could validate if race (black South African's) presents a stronger influence on intentions because of the unique personal qualities or characteristics of the individual, or if it is a function of the opportunities that have been made available to this group. One could possibly employ a conjoint analysis which creates an experimental design to construct hypothetical

alternatives such that one can estimate the importance for each of the attributes using statistical methods (Bakken & Frazier, 2006). This implies that hypothetical opportunities could be presented to participants and their response recorded and compared for differences across race groups.

## **7.7. Conclusion**

The TPB was proven to be a significant predictor of entrepreneurial intention. This suggests that policy makers have a theoretical framework to help identify areas of policy weakness that are restricting the development of entrepreneurial intentions. The TPB would then suffice to measure the efficiency of policy interventions as by a pre and post-test comparison of attitudes toward entrepreneurship.

Finally, further analysis revealed that demographic variables are found to have a significant residual effect beyond the predictor variables within the TPB. Closer investigation revealed that a particular racial group (black individuals) was solely responsible for the significant influence on intentions, thus rendering age, gender and all other racial groups as weak, insignificant contributors. Strictly speaking, the results prove that the TPB is not sufficient in capturing all variation in entrepreneurial intention.

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10.4135/9781412983907.n889

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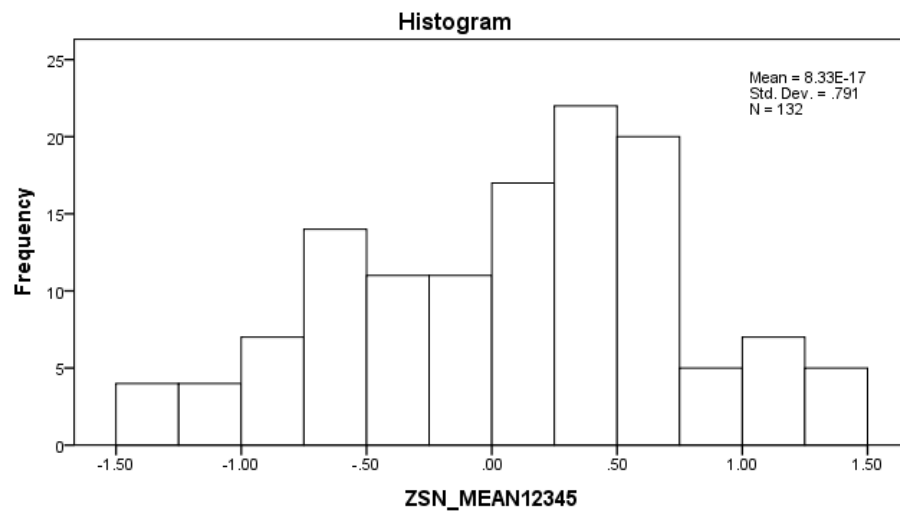
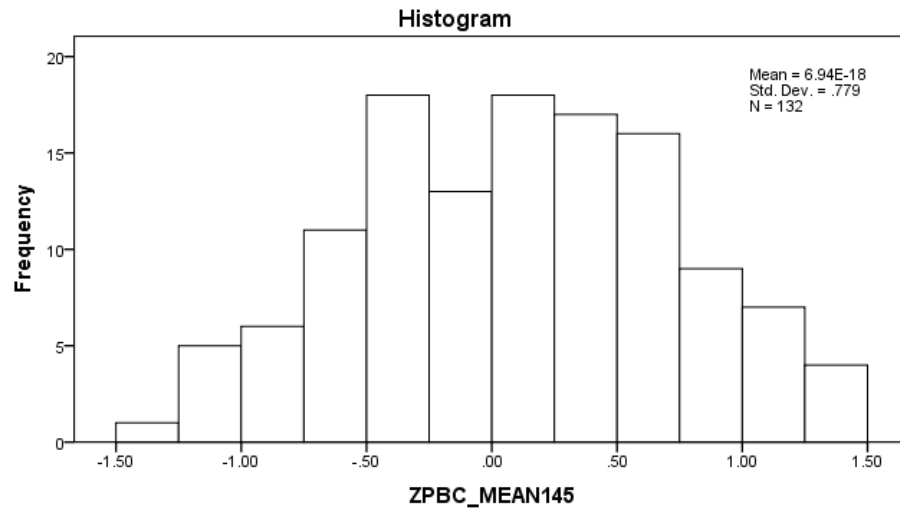
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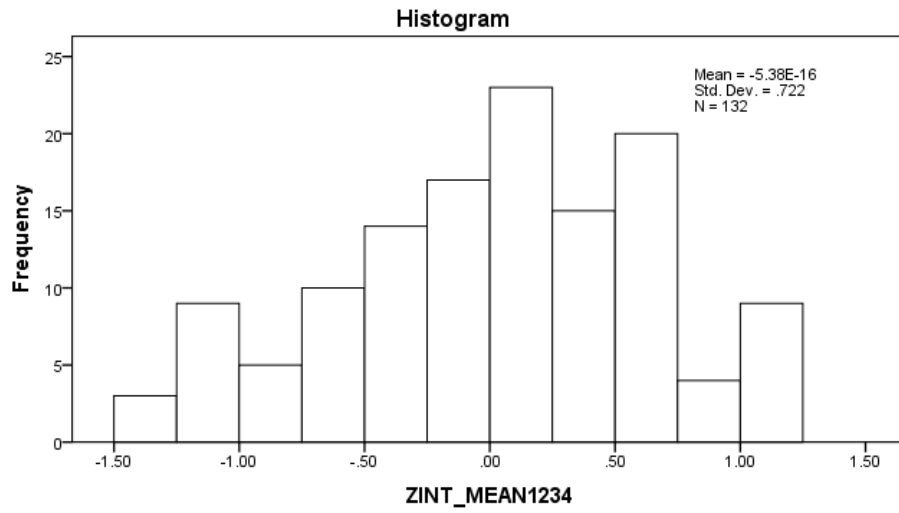
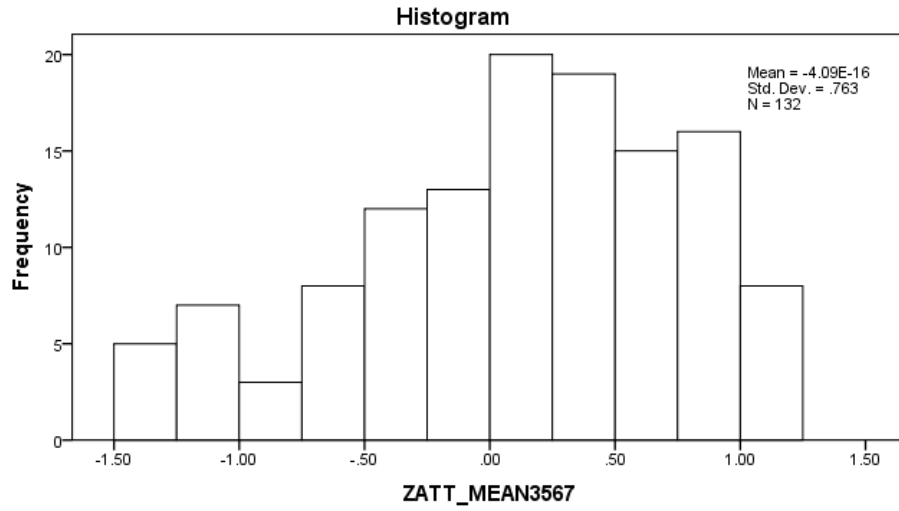
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## 9. APPENDICES

### Appendix A: Regression Assumptions – Normality





## Appendix B: Survey Questionnaire

### INTRODUCTION - SURVEY CONSENT

The purpose of this research is to learn more about the precursors to entrepreneurial activity. The survey should not take more than 10 minutes of your time. Your participation is voluntary and you can withdraw at any time without penalty. Note that all data will be kept confidential. By completing the survey, you indicate that you voluntarily participate in this research. If you have any concerns, please feel free to contact the researcher Dylan Rusteberg at drusteberg@gmail.com or his supervisor Dr. Jonathan Marks at marksj@gibs.co.za

### DEMOGRAPHIC INFORMATION

Please capture your demographic information as listed below:

#### \*1. Age

Years

#### \*2. Gender

Female  Male

#### \*3. Racial Group

Asian  Black  Coloured  Indian  White  Other

### EMPLOYMENT RELATED INFORMATION

Please capture your employment information as listed below:

#### \*4. Are you currently involved in some form of entrepreneurial activity?

(Do you own your own business/owner within a business?)

No  Yes

#### \*5. Employment sector:

Public  Private

#### \*6. Industry

Construction  Finance  Hospitality  Manufacturing  Medical  Mining  Retail  Transport  Utilities (Power/Water)  Other  Not sure

#### \*7. Years of formal employment experience

Years

#### \*8. Number of direct reports into you:

Employees

### SURVEY - PART 1

For each question, please select the a response that is most applicable to you

**\*9. I am confident that I would succeed if I started my own business**

Disagree      Slightly Disagree      Neutral      Slightly Agree      Agree

**\*10. It would be easy for me to start my own business**

Disagree      Slightly Disagree      Neutral      Slightly Agree      Agree

**\*11. To start my own business would probably be the best way for me to take advantage of my education**

Disagree      Slightly Disagree      Neutral      Slightly Agree      Agree

**\*12. I have the skills and capabilities required to succeed as an entrepreneur**

Disagree      Slightly Disagree      Neutral      Slightly Agree      Agree

**\*13. How practical is it for you to start your own business?**

**Record your answer as a value between 0 and 100. The bigger the number = stronger belief that starting your own business would be a practical option**

Select a value between 0 and 100.

**\*14. If I were to start my own business, my family would consider it to be**

Highly Undesirable      Undesirable      Slightly Undesirable      Neutral      Slightly Desirable      Desirable      Highly Desirable

**\*15. If I were to start my own business, my friends would consider it to be**

Highly Undesirable      Undesirable      Slightly Undesirable      Neutral      Slightly Desirable      Desirable      Highly Desirable

**\*16. If I were to start my own business, my colleagues would consider it to be**

Highly Undesirable      Undesirable      Slightly Undesirable      Neutral      Slightly Desirable      Desirable      Highly Desirable

**\*17. If I were to start my own business, other people close to me would consider it to be**

Highly Undesirable      Undesirable      Slightly Undesirable      Neutral      Slightly Desirable      Desirable      Highly Desirable

**\*18. Would family and friends want you to start your own business?**

**Record your answer as a value between 0 and 100. The bigger the number = stronger support from your family and friends to start your business**

Select a value between 0 and 100.

## SURVEY - PART 2

For each question, please select a response that is most applicable to you

**\* 19. As a career alternative: A corporate career (working for large, established, private sector employer) would be**

Highly Undesirable   Undesirable   Slightly Undesirable   Neutral   Slightly Desirable   Desirable   Highly Desirable

**\* 20. As a career alternative: A civil servant career (working for a government agency or other public agency) would be**

Highly Undesirable   Undesirable   Slightly Undesirable   Neutral   Slightly Desirable   Desirable   Highly Desirable

**\* 21. As a career alternative: An entrepreneurial career (starting up and or managing a business of my own or with family or friends, self-employed) would be**

Highly Undesirable   Undesirable   Slightly Undesirable   Neutral   Slightly Desirable   Desirable   Highly Desirable

**\* 22. As a career alternative: An academic career (working at a university or a research institute) would be**

Highly Undesirable   Undesirable   Slightly Undesirable   Neutral   Slightly Desirable   Desirable   Highly Desirable

**\* 23. If my child (present or future) decided to become an entrepreneur (start their own business), I myself would consider it to be**

Extremely Bad   Bad   Slightly Bad   Neutral   Slightly Good   Good   Extremely Good

**\* 24. I personally consider entrepreneurship to be a highly desirable career alternative for people with my professional and educational background**

Strongly Disagree   Disagree   Slightly Disagree   Neutral   Slightly Agree   Agree   Strongly Agree

**\* 25. Is starting your own business an attractive idea to you?**

**Record your answer as a value between 0 and 100. The bigger the number = a stronger attraction to starting your own business**

Select a value between 0 and 100.

**\* 26. How likely is it that you will start a new business of your own or with someone else? Please assess each option of starting different types of businesses using the scale below**

	Not at all likely	Not very likely	Likely	Very likely	Already started a firm
Start a business on full-time basis within one year:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start a business on full-time basis within five (5) years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start a business on part-time basis within one year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start a business on part-time basis within five (5) years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix C: SPSS Syntax

```
**** RUN EXCLUSIONS.
    USE ALL.
    COMPUTE filter_$(EActivity = 1 & Exclusion = 0).
    VARIABLE LABELS filter_$ 'EActivity = 1 & Exclusion = 0
    (FILTER)'.
    VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
    FORMATS filter_$ (f1.0).
    FILTER BY filter_$.
    EXECUTE.
**** DESCRIPTIVE STATISTICS.
**** CATEGORICAL VARIABLES.
    FREQUENCIES VARIABLES=Gender Race SEC IND
    /ORDER=ANALYSIS.

**** CONTINUOUS VARIABLES.
    DESCRIPTIVES VARIABLES=Age YExperience NEmployees
    /STATISTICS=MEAN STDDEV MIN MAX.
**** STANDARDISING ALL SCALES (FOR PURPOSES OF OUTLIER ANALYSIS) .
**** CREATING Z-PBC'S (PERCEIVED BEHAVIOURAL CONTROL) .
    DESCRIPTIVES VARIABLES= PBC1 PBC2 PBC3 PBC4 PBC5
    /SAVE
    /STATISTICS=MEAN STDDEV MIN MAX.
**** CREATING Z-SN'S (SUBJECTIVE NORM) .
    DESCRIPTIVES VARIABLES= SN1 SN2 SN3 SN4 SN5
    /SAVE
    /STATISTICS=MEAN STDDEV MIN MAX.
**** CREATING Z-ATT'S (ATTITUDE TOWARD THE BEHAVIOUR) .
    DESCRIPTIVES VARIABLES=ATT1 ATT2 ATT3 ATT4 ATT5 ATT6 ATT7
    /SAVE
    /STATISTICS=MEAN STDDEV MIN MAX.
**** CREATING Z-INT'S (INTENTION) .
    DESCRIPTIVES VARIABLES= INT1 INT2 INT3 INT4
    /SAVE
    /STATISTICS=MEAN STDDEV MIN MAX.
**** OUTLIER ANALYSIS - INDIVIDUAL MEASUREMENT ITEMS.
**** ZPBC (PERCEIVED BEHAVIOURAL CONTROL) .
    EXAMINE VARIABLES=ZPBC1 ZPBC2 ZPBC3 ZPBC4 ZPBC5
    /COMPARE VARIABLE
    /PLOT=BOXPLOT
    /STATISTICS=NONE
    /NOTOTAL
    /ID=SurveyCode
    /MISSING=LISTWISE.
**** ZSN (SUBJECTIVE NORM) .
    EXAMINE VARIABLES=ZSN1 ZSN2 ZSN3 ZSN4 ZSN5
    /COMPARE VARIABLE
    /PLOT=BOXPLOT
    /STATISTICS=NONE
    /NOTOTAL
    /ID=SurveyCode
    /MISSING=LISTWISE.
**** ZATT (ATTITUDE TOWARD THE BEHAVIOUR) .
    EXAMINE VARIABLES=ZATT1 ZATT2 ZATT3 ZATT4 ZATT5 ZATT6 ZATT7
    /COMPARE VARIABLE
    /PLOT=BOXPLOT
```

```

/STATISTICS=NONE
/NOTOTAL
/ID=SurveyCode
/MISSING=LISTWISE.
**** ZINT (INTENTION).
  EXAMINE VARIABLES=ZINT1 ZINT2 ZINT3 ZINT4
  /COMPARE VARIABLE
  /PLOT=BOXPLOT
  /STATISTICS=NONE
  /NOTOTAL
  /ID=SurveyCode
  /MISSING=LISTWISE.
**** PRINCIPLE COMPONENTS ANALYSIS WITH VERIMAX ROTATION -
INDIVIDUAL MEASUREMENT ITEMS.
  FACTOR
  /VARIABLES ZPBC1 ZPBC2 ZPBC3 ZPBC4 ZPBC5 ZSN1 ZSN2 ZSN3 ZSN4
  ZSN5 ZATT3 ZATT5 ZATT6 ZATT7 ZINT1 ZINT2 ZINT3 ZINT4
  /MISSING PAIRWISE
  /ANALYSIS ZPBC1 ZPBC2 ZPBC3 ZPBC4 ZPBC5 ZSN1 ZSN2 ZSN3 ZSN4
  ZSN5 ZATT3 ZATT5 ZATT6 ZATT7 ZINT1 ZINT2 ZINT3 ZINT4
  /PRINT INITIAL KMO EXTRACTION ROTATION FSCORE
  /PLOT EIGEN
  /CRITERIA FACTORS(4) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
**** CORRELATION ANALYSIS - INDIVIDUAL MEASUREMENT ITEMS.
  CORRELATIONS
  /VARIABLES=ZPBC1 ZPBC2 ZPBC3 ZPBC4 ZPBC5 ZSN1 ZSN2 ZSN3 ZSN4
  ZSN5 ZATT3 ZATT5 ZATT6 ZATT7 ZINT1 ZINT2 ZINT3 ZINT4
  /PRINT=TWOTAIL NOSIG
  /STATISTICS DESCRIPTIVES
  /MISSING=PAIRWISE.
**** INTERNAL RELIABILITY - CRONBACH'S ALPHA - INDIVIDUAL
MEASUREMENT ITEMS.
**** PERCEIVED BEHAVIOURAL CONTROL.
  RELIABILITY
  /VARIABLES=PBC1 PBC2 PBC3 PBC4
  /SCALE('PBC1234') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL MEANS VARIANCE CORR.
  RELIABILITY
  /VARIABLES=ZPBC1 ZPBC2 ZPBC3 ZPBC4
  /SCALE('Z_PBC1234') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL MEANS VARIANCE CORR.
  RELIABILITY
  /VARIABLES=ZPBC1 ZPBC2 ZPBC3 ZPBC4 ZPBC5
  /SCALE('Z_PBC12345') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL MEANS VARIANCE CORR.
  RELIABILITY
  /VARIABLES=ZPBC1 ZPBC4 ZPBC5

```

```

        /SCALE('Z_PBC145') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
**** SUBJECTIVE NORM.
    RELIABILITY
        /VARIABLES=SN1 SN2 SN3 SN4
        /SCALE('SN1234') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=ZSN1 ZSN2 ZSN3 ZSN4
        /SCALE('Z_SN1234') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=ZSN1 ZSN2 ZSN3 ZSN4 ZSN5
        /SCALE('Z_SN12345') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
**** ATTENTION.
    RELIABILITY
        /VARIABLES=ZATT3 ZATT5 ZATT6
        /SCALE('Z_ATT356') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=ZATT3 ZATT5 ZATT6 ZATT7
        /SCALE('Z_ATT3567') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
**** INTENTION.
    RELIABILITY
        /VARIABLES=INT1 INT2
        /SCALE('INT12') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=INT3 INT4
        /SCALE('INT34') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=INT1 INT2 INT3 INT4
        /SCALE('INT1234') ALL
        /MODEL=ALPHA
        /STATISTICS=DESCRIPTIVE SCALE
        /SUMMARY=TOTAL MEANS VARIANCE CORR.
    RELIABILITY
        /VARIABLES=ZINT1 ZINT2

```

```

/SCALE('ZINT12') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL MEANS VARIANCE CORR.
RELIABILITY
/VARIABLES=ZINT3 ZINT4
/SCALE('ZINT34') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL MEANS VARIANCE CORR.
RELIABILITY
/VARIABLES=ZINT1 ZINT2 ZINT3 ZINT4
/SCALE('ZINT1234') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL MEANS VARIANCE CORR.
**** CREATING DEPENDENT AND INDEPENDENT VARIABLES (THERE IS NO
DIFFERENCE BETWEEN USING A MEAN OR SUM OF INDIVIDUAL LIKERT ITEMS IN
THE CORRELATION OR REGRESSION ANALYSIS. RESULTS ARE EQUAL).
**** INDEPENDENT VARIABLES ~ COMPOSITE MEASUREMENT SCALES (AUTIO AND
KRUEGER).
    COMPUTE ZPBC_MEAN145 = MEAN(ZPBC1, ZPBC4, ZPBC5).
    EXECUTE.
    COMPUTE ZSN_MEAN12345 = MEAN(ZSN1, ZSN2, ZSN3, ZSN4, ZSN5).
    EXECUTE.
    COMPUTE ZATT_MEAN3567 = MEAN(ZATT3, ZATT5, ZATT6, ZATT7).
    EXECUTE.
**** INDEPENDENT VARIABLES ~ AUTIO'S ORIGINAL MEASUREMENT SCALES.
    COMPUTE ZPBC_MEAN145_ORIG = MEAN(ZPBC1, ZPBC4, ZPBC5).
    EXECUTE.
    COMPUTE ZSN_MEAN1234_ORIG = MEAN(ZSN1, ZSN2, ZSN3, ZSN4).
    EXECUTE.
    COMPUTE ZATT_MEAN356_ORIG = MEAN(ZATT3, ZATT5, ZATT6).
**** DEPENDENT VARIABLES ~ AUTIO'S ORIGINAL MEASUREMENT SCALE.
    COMPUTE ZINT_MEAN1234 = MEAN(ZINT1, ZINT2, ZINT3, ZINT4).
    EXECUTE.
**** CREATING DUMMY VARIABLES FOR NOMINAL VARIABLES (#DUMMY
VARIABLES = N-1).
    RECODE GENDER (1=0) (2=1) INTO GENDER_GLOB.
    EXECUTE.
    RECODE SEC (1=0) (2=1) INTO SEC_GLOB.
    EXECUTE.
    RECODE RACE (1=0) (2=1) (3=0) (4=0) (5=0) (6=0) INTO
    RACE_GLOB_B.
    EXECUTE.
    RECODE RACE (1=0) (2=0) (3=0) (4=0) (5=1) (6=0) INTO
    RACE_GLOB_W.
    EXECUTE.
    COMPUTE RACE_GLOB_OTHER=1-RACE_GLOB_B - RACE_GLOB_W.
    EXECUTE.
**** CORRELATION ANALYSIS - AGGREGATE CONSTRUCT SCALE.
CORRELATIONS
/VARIABLES=ZPBC_MEAN145          ZSN_MEAN12345          ZATT_MEAN3567
ZINT_MEAN1234
/PRINT=TWOTAIL NOSIG
/STATISTICS DESCRIPTIVES
/MISSING=PAIRWISE.

```

**\*\*\*\* LINEARITY - REGRESSION ASSUMPTION - AGGREGATE CONSTRUCT SCALE.**

```
GGRAPH
  /GRAPHDATASET  NAME="graphdataset"  VARIABLES=ZPBC_MEAN145
ZSN_MEAN12345 ZATT_MEAN3567
  ZINT_MEAN1234 MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: ZPBC_MEAN145=col(source(s), name("ZPBC_MEAN145"))
  DATA: ZSN_MEAN12345=col(source(s), name("ZSN_MEAN12345"))
  DATA: ZATT_MEAN3567=col(source(s), name("ZATT_MEAN3567"))
  DATA: ZINT_MEAN1234=col(source(s), name("ZINT_MEAN1234"))
  GUIDE: axis(dim(1.1), ticks(null()))
  GUIDE: axis(dim(2.1), ticks(null()))
  GUIDE: axis(dim(1), gap(0px))
  GUIDE: axis(dim(2), gap(0px))
  TRANS: ZPBC_MEAN145_label = eval("ZPBC_MEAN145")
  TRANS: ZSN_MEAN12345_label = eval("ZSN_MEAN12345")
  TRANS: ZATT_MEAN3567_label = eval("ZATT_MEAN3567")
  TRANS: ZINT_MEAN1234_label = eval("ZINT_MEAN1234")
  ELEMENT:
point(position((ZPBC_MEAN145/ZPBC_MEAN145_label+ZSN_MEAN12345/
ZSN_MEAN12345_label+
ZATT_MEAN3567/ZATT_MEAN3567_label+ZINT_MEAN1234/ZINT_MEAN1234_
label)*
(ZPBC_MEAN145/ZPBC_MEAN145_label+ZSN_MEAN12345/ZSN_MEAN12345_l
abel+
ZATT_MEAN3567/ZATT_MEAN3567_label+ZINT_MEAN1234/ZINT_MEAN1234_
label)))
END GPL.
```

**\*\*\*\* HOMOSCEDASTICITY - REGRESSION ASSUMPTION - AGGREGATE CONSTRUCT SCALE.**

```
* BREUSCH-PAGAN & KOENKER TEST MACRO *
* See 'Heteroscedasticity: Testing and correcting in SPSS'
* by Gwilym Pryce, for technical details.
* Code by Marta Garcia-Granero 2002/10/28.

* The MACRO needs 3 arguments:
* the dependent, the number of predictors and the list of predictors
* (if they are consecutive, the keyword TO can be used) .

* (1) MACRO definition (select an run just ONCE).
* Ho: Homoscedastic.
* H1: Not Homoscedastic

DEFINE bpktest(!POSITIONAL !TOKENS(1) /!POSITIONAL !TOKENS(1)
/!POSITIONAL !CMDEND).
* Regression to get the residuals and residual plots.
REGRESSION
/STATISTICS R ANOVA
/DEPENDENT !1
/METHOD=ENTER !3
/SCATTERPLOT=(*ZRESID,*ZPRED)
/RESIDUALS HIST(ZRESID) NORM(ZRESID)
/SAVE RESID(residual) .
do if $casenum=1.
print /"Examine the scatter plot of the residuals to detect"
```

```

/"model misspecification and/or heteroscedasticity"
/""
/"Also, check the histogram and np plot of residuals "
/"to detect non normality of residuals "
/"Skewness and kurtosis more than twice their SE indicate non-
normality ".
end if.
* Checking normality of residuals.
DESCRIPTIVES
VARIABLES=residual
/STATISTICS=KURTOSIS SKEWNESS .
* New dependent variable (g) creation.
COMPUTE sq_res=residual**2.
compute constant=1.
AGGREGATE
/OUTFILE='tempdata.sav'
/BREAK=constant
/rss = SUM(sq_res)
/N=N.
MATCH FILES /FILE=*
/FILE='tempdata.sav'.
EXECUTE.
if missing(rss) rss=lag(rss,1).
if missing(n) n=lag(n,1).
compute g=sq_res/(rss/n).
execute.
* BP&K tests.
* Regression of g on the predictors.
REGRESSION
/STATISTICS R ANOVA
/DEPENDENT g
/METHOD=ENTER !3
/SAVE RESID(resid) .
*Final report.
do if $casenum=1.
print /" BP&K TESTS"
/" =====".
end if.
* Routine adapted from Gwilym Pryce.
matrix.
compute p=!2.
get g /variables=g.
get resid /variables=resid.
compute sq_res2=resid**2.
compute n=nrow(g).
compute rss=msum(sq_res2).
compute ii_1=make(n,n,1).
compute i=ident(n).
compute m0=i-((1/n)*ii_1).
compute tss=transpos(g)*m0*g.
compute regss=tss-rss.
print regss
/format="f8.4"
/title="Regression SS".
print rss
/format="f8.4"
/title="Residual SS".

```

```

print tss
/format="f8.4"
/title="Total SS".
compute r_sq=1-(rss/tss).
print r_sq
/format="f8.4"
/title="R-squared".
print n
/format="f4.0"
/title="Sample size (N)".
print p
/format="f4.0"
/title="Number of predictors (P)".
compute bp_test=0.5*regss.
print bp_test
/format="f8.3"
/title="Breusch-Pagan test for Heteroscedasticity"
+ " (CHI-SQUARE df=P)".
compute sig=1-chicdf(bp_test,p).
print sig
/format="f8.4"
/title="Significance level of Chi-square df=P (H0:"
+ "homoscedasticity)".
compute k_test=n*r_sq.
print k_test
/format="f8.3"
/title="Koenker test for Heteroscedasticity"
+ " (CHI-SQUARE df=P)".
compute sig=1-chicdf(k_test,p).
print sig
/format="f8.4"
/title="Significance level of Chi-square df=P (H0:"
+ "homoscedasticity)".
end matrix.
!ENDDEFINE.

* x1 is the dependent and x2 TO x20 the predictors.
* (3) MACRO CALL (select and run).

BPKTEST      ZINT_MEAN1234      3      ZPBC_MEAN145      ZSN_MEAN12345
ZATT_MEAN3567.
**** MULTICOLLINEARITY - REGRESSION ASSUMPTION - AGGREGATE CONSTRUCT SCALE.
**** TOLERANCE METHOD (WHERE TOLERANCE > 1-R2 = 0.1).
**** ZSN_MEAN12345 DEPENDENT VARIABLE.
      REGRESSION
        /DESCRIPTIVES MEAN STDDEV CORR SIG N
        /MISSING LISTWISE
        /STATISTICS COEFF OUTS R ANOVA ZPP COLLIN TOL
        /CRITERIA=PIN(.05) POUT(.10)
        /NOORIGIN
        /DEPENDENT ZSN_MEAN12345
        /METHOD=ENTER ZPBC_MEAN145 ZATT_MEAN3567.
**** ZATT_MEAN3567 DEPENDENT VARIABLE.
      REGRESSION
        /DESCRIPTIVES MEAN STDDEV CORR SIG N
        /MISSING LISTWISE

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/STATISTICS COEFF OUTS R ANOVA ZPP COLLIN TOL
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT ZATT_MEAN3567
/METHOD=ENTER ZPBC_MEAN145 ZSN_MEAN12345.
**** ZPBC_MEAN145 DEPENDENT VARIABLE.
REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA ZPP COLLIN TOL
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT ZPBC_MEAN145
/METHOD=ENTER ZATT_MEAN3567 ZSN_MEAN12345.
**** MULTIPLE REGRESSION ANALYSIS.
**** REGRESSING TPB.
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT ZINT_MEAN1234
/METHOD=ENTER ZPBC_MEAN145 ZSN_MEAN12345 ZATT_MEAN3567.
**** HIERARCHICAL MULTIPLE REGRESSION ANALYSIS.
REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA CHANGE ZPP
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT ZINT_MEAN1234
/METHOD=ENTER ZPBC_MEAN145 ZSN_MEAN12345 ZATT_MEAN3567
/METHOD=ENTER Age GENDER_GLOB RACE_GLOB_B RACE_GLOB_W.

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