

**THE IMPACT OF TECHNOLOGICAL CREATIVITY AND
ENTREPRENEURSHIP EDUCATION ON THE
ENTREPRENEURSHIP INTENTIONS OF STUDENTS AT
PARTICULAR TERTIARY INSTITUTIONS IN
ZIMBABWE AND SOUTH AFRICA**

By

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in the

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November 2016

DECLARATION

I, Takawira Munyaradzi Ndofirepi, Student Number, [REDACTED] declare that the thesis entitled “The Impact of technological creativity and entrepreneurship education on the entrepreneurship intentions of students from particular tertiary institutions in Zimbabwe and South Africa,” hereby submitted for the degree D Tech: Business Administration has not previously been submitted for a degree at this or any other university. I further declare that this is my own independent work in design and execution and that all materials contained herein have been duly acknowledged. I cede the copyright of this thesis in favour of the Central University of Technology, Free State.



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DATE

ABSTRACT

This study explores the collective influence of technological creativity (TC) and exposure to entrepreneurship education (EE) on the entrepreneurship intentions (EI) of students at particular tertiary institutions in Zimbabwe and South Africa. Drawing on a positivist epistemology, a quantitative case study and total percentage analysis of tertiary education students who were randomly selected from the entrepreneurial programmes at the Central University of Technology, Free State (South Africa) and Kwekwe Polytechnic College (Zimbabwe), the study examines the extent to which these students intended to engage in entrepreneurship careers in the near future.

Self-administered questionnaires were used to collect data from respondents. Out of a total of 400 questionnaires which were distributed to students enrolled for entrepreneurship courses at the two campuses, 284 were completed and returned, representing an overall response rate of 71%. A non-parametric test, the Mann-Whitney U test, was employed to establish whether there are any significant differences in the level of entrepreneurship intentions between South African and Zimbabwean tertiary education students. Another non-parametric technique, the Spearman Correlation, was employed to assess the relationships between technological creativity and entrepreneurship education on the one hand, and the direct determinants of entrepreneurship intentions and actual entrepreneurship intentions, on the other. The same technique was also used to assess the relationships between the immediate determinants of entrepreneurship intention and actual entrepreneurship intentions. Multiple regression analysis was conducted to test a number of predictive effects. Firstly, it was used to test the predictive effect of entrepreneurship education and technological creativity on the immediate determinants of entrepreneurship intentions. Secondly, it was used to assess the predictive effects of the immediate precursors of entrepreneurship intentions on the actual entrepreneurship intentions. Lastly, it tested the direct effects of entrepreneurship education and technological creativity on actual entrepreneurship intentions.

The results demonstrate that although a majority of the Zimbabwean and South African respondents intended to engage in entrepreneurship in the near future, there were no significant differences in the levels of entrepreneurship intentions amongst both groups. Although some minimum variations were notable across the two groups, some positive and significant correlations between entrepreneurship education and technological creativity, on one hand, and the direct determinants of entrepreneurship intentions and actual entrepreneurship intentions, on the other, were revealed for both groups of students. The findings also provided strong support to the view that entrepreneurship education and technological creativity jointly predict the antecedents of entrepreneurship intention but have a non-significant direct relationship with actual entrepreneurship intentions. Lastly, all the immediate determinants of entrepreneurship intentions, except for subjective norms, significantly predict entrepreneurship intentions of South African and Zimbabwean tertiary students.

To a large extent, the results validated the Theory of Planned Behaviour as a guiding tool for estimating any premeditated entrepreneurial behaviour. Thus, the Theory remains an invaluable theoretical lens for academics, educators and policy-makers' evaluation of effective ways of enhancing the grooming of potential entrepreneurs. The theoretical contribution of this study lies in its introduction of a novel, previously untested construct, technological creativity, to the Theory of Planned Behaviour, to unravel the complexity of entrepreneurial intentions among tertiary students in a comparative country-based study. Based on the significant joint effects of entrepreneurship education and technological creativity on the direct determinants of entrepreneurship intentions, the study recommends the infusion of technological creativity into entrepreneurship education courses at tertiary institutions in Zimbabwe and South Africa.

ACKNOWLEDGEMENTS

Many people shared with me the joys and sorrows of this tortuous journey. However, I wish to express my sincere indebtedness to the following individuals for the special roles they played in the research processes leading to the completion of this study:

- My supervisor, Dr Patient Rambe, “the task-master,” who diligently guided me throughout the process, always holding my hand in times of challenges but demanding no less than the best from me. As he always euphemistically remarked: “None of my students are awarded mickey-mouse degrees!”
- My co-supervisor, Professor Dennis Yao Dzansi, for his professional guidance and direction whenever needed.
- Professor Crispen Chipunza, for opening the door for me to pursue postgraduate study.
- My wife, Edith, and daughter, Tawananyasha, for their moral support during the testing journey.
- Ms Dudu Ndlovu for conducting the statistical analysis process.
- To all my colleagues and friends not mentioned, for their contributions to my study in different ways.
- Prof Irikidzayi Manase for editing and proof-reading the thesis.
- Dr Ramorena, Dr Agbobli, Mrs Ndjike-Fongwa and Mrs Ngowi, academic staff in the Department of Business Support Studies who assisted me with the administration of the research instruments.
- To the respondents, for the time they spent on completing the questionnaire
- Central University of Technology for providing the precious funding needed for the studies.
- The Lord for granting me the life-changing opportunity to pursue further studies and the strength to see it through.
- Lastly, I would want to express my gratitude to my family for their moral support all the way. *Tinoti nhasi ndezveduwo vana Chirandu!* (They say it’s our turn to celebrate!)



DEDICATION

To the Ndofirepi clan

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CHAPTER 1: ORIENTATION TO THE STUDY

INTRODUCTION
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CONCEPTUAL MODEL
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AIM OF THE STUDY
RESEARCH QUESTIONS
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SIGNIFICANCE OF THE STUDY
LIMITATIONS
DELIMITATION
CHAPTER OUTLINE
SUMMARY

1.1 INTRODUCTION

This study explores the collective impact of technological creativity (TC) and exposure to entrepreneurship education (EE) on the entrepreneurship intentions (EI) of students at particular tertiary institutions in Zimbabwe and South Africa, countries saddled with high youth unemployment rates¹. This blended approach is informed by proposals from numerous scholars calling for the infusion of creativity in entrepreneurship education in order to enhance the full development of students' pertinent entrepreneurial potential (Hamidi, Wennberg & Berglund, 2008; Zampetakis, 2008; Zampetakis, Gotsi & Andriopoulos, 2011; Schmidt, Soper & Bernaciak, 2013; Lin & Nabergoj, 2014). To date, the conventional research focus has been to address the individual impact of the creativity and entrepreneurship education, separate and distinct constructs, on the entrepreneurship intentions of respondents separately (Ahlin, Drnovšek & Hisrich, 2014; Bae, Qian, Miao & Fiet, 2014; Stuetzer, Obschonka, Brixy, Sternberg & Cantner, 2014; Piperopoulos & Dimov, 2015). Following empirical evidence on the positive correlation between each of these predictor constructs (i.e. creativity and entrepreneurship education) on entrepreneurship intentions levels, it is noted that their integration may have a synergistic effect on the dependent variable (i.e. the entrepreneurship intentions of students), hence this study.

This introductory chapter, nonetheless, presents a general background to the study, highlighting the two geographic contexts in which the study took place. The chapter also provides a justification of the research, the problem statement, research questions, and hypotheses, limitations of the study, definition of terms and an outline of the thesis' chapters.

¹ The unemployment statistics in Zimbabwe which are supplied by the country's government are contentious as they are based on broad unemployment which is estimated at 11% (Zimstat, 2014). However, the same statistics confirm that only 16% of the Zimbabwean economically active population is formally employed. Some scholars estimate the formal unemployment rate at above 80% (Bhebhe & Mahapa, 2014; Rusvingo, 2015). The unemployment rate in South Africa increased to 26.7 percent in the three months to March of 2016 from 24.5 percent, in the previous quarter, and above market expectations of 25.3 percent (Trading Economics, 2016).

1.2 BACKGROUND TO THE STUDY

The socio-economic scars left by the global financial crisis experienced in 2008 are unprecedented and markedly felt by the youths that are about to enter the labour market across the world. According to Schott, Kew, and Cheraghi (2015), young people are thrice likely to be unemployed when compared to the elderly segment of the world population. Disturbingly, most youths find themselves under-employed in insecure, informal and or non-paid family business occupations. The African continent bears a significant proportion of the brunt of this socio-economic scourge given that "... nearly 200 million Africans are aged between 15 and 24" (Kew, Namatovu, Aderinto & Chigunta, 2015:5). Unsurprisingly, this economically active age group is under tremendous pressure to secure rewarding jobs and economic opportunities in order to sustain their livelihoods in a harsh job-scarce economic environment. As Bosma, Wennekers, Guerrero, Amorós, Martiarena and Singer (2013) highlight, African labour markets are not generating enough formal and quality jobs that match the quantity of school leavers and college graduates entering the labour market annually. Given such a scenario, Brixiova, Ncube and Bicaba (2015) emphasise the need to stimulate youth entrepreneurial activity as part of a broad developmental strategy to solve the problem of youth unemployment and associated economic difficulties.

A survey of economic and social policy literature reveals the insurmountable role entrusted to entrepreneurship in the face of numerous challenges encountered in contemporary and increasingly technology-driven economies (Naude, Szirmai & Goedhuys, 2011; Wright & Stigliani, 2012; Marcotte, 2014). Academic literature (Gyamfi, 2014; Smallbone, Welter & Ateljevic, 2014), governments and think-tanks (Schwab & Sala-i-Martin, 2014; Kelley et al., 2015; World Economic Forum, 2015) portray entrepreneurship as a solution to numerous socio-economic malaises such as unemployment, poverty and poor economic performance. The following statement in the Global Entrepreneurship Monitor (GEM) Africa Report underscores the difficult role expected of entrepreneurship:

"Throughout the world, shifts in population demographics, technological changes, fluctuating economies and other dynamic forces have

transformed societies as never before, bringing new challenges and opportunities to the forefront. Among the responses to these shifting forces is an increased emphasis on entrepreneurship by governments, organisations and the public” (Herrington & Kelley, 2012:6).

Policy-makers and scholars across the world admit to the importance of entrepreneurship to nations as noted in the way they concede to the value-creating potential of technological innovations and creativity in economies (Wilson, 2009; Bradley, McMullen, Artz & Simiyu, 2012; Babu, Krishna & Swathi, 2013; Sarooghi, Libaers & Burkemper, 2015). In support of the preceding view, Mittelstadt and Cerri (2008), and Bohnsack, Pinkse and Kolk (2014) affirm that innovative technologies, which are apparent indicators of technological creativity, open up new avenues for business growth, provide a foundation for economic advancement and sophistication and assist in the establishment of global competitiveness of national economies. In addition, Thukral, Von Her, Groen, Van der Sijd and Adhem (2008) recognise the role of technological innovation and creativity in generating potential business opportunities through what they term disruptive technologies. Disruptive technologies, here, are concurrent triggers and consequences of creativity (Kostoff, Boylan & Simons, 2004; Sabatier, Craig-Kennard & Mangematin, 2012), and operate in a manner that causes the removal and replacement of existing standard business models with new ones (Albors, Sweeney & Hidalgo, 2015; Whiting & Williams, 2015). Therefore, effective and productive entrepreneurs recognise and create economic opportunities through such technological revolutions, in that way creating economic value for themselves (Fairlie, 2013; Thurik, Stam & Audretsch, 2013), and their communities through the trickle-down effect of their activities.

The above discussion suggests an association between technological creativity and entrepreneurship. Such a linkage creates a hypothetically strong foundation for the formation of many and more viable new business ventures (Chea, 2008; Fillis & Rentschler, 2010, Lukic, 2012). Potentially, this has positive ramifications for the rate of job creation and improvement of the socio-economic well-being of nations (Audretsch, 2006; Griffiths, Kickul, Bacq & Terjesen, 2012; Hyde-Clarke, 2013;

Eijndenberg, Leonard & Masurel, 2015). In addition, the effects are critical to poor countries with high unemployment rates and low standards of living such as those prevailing in several Sub-Saharan African countries (Government of Zimbabwe Medium Term Plan, 2010; Government of Zimbabwe-UNDP, 2012; Golub & Hayat, 2014). This partly explains why some governments and other concerned stakeholders in Sub-Saharan Africa have promulgated policy frameworks to promote entrepreneurship and innovation in order to encourage the formation of new firms, creation of jobs and for socio-economic development (Herrington & Kelly, 2012). Examples of such efforts include the National Youth Development Agency (South Africa), the Citizen Entrepreneurial Development Agency (Botswana), the Youth Opportunities Programme (Uganda), SMEs Compete (Namibia), the Youth Entrepreneurship Development Fund (Malawi) and the introduction of compulsory entrepreneurship education at numerous higher education institutions (HEIs) in Zimbabwe.

A disconcerting scenario in the South African setting is the relatively lower level of opportunity-driven entrepreneurship activity amongst unemployed youths, notwithstanding substantial efforts by various stakeholders to encourage new venture creation and self-employment in the country (Steenekamp, 2013; Kew, Namatovu, Aderinto, & Chigunta, 2015). The 2012 GEM Africa Report shows that South Africa had the lowest total entrepreneurship activity amongst nations that took part in the GEM Survey, with only 7.3 % of the economically active population being involved in entrepreneurial activities (Turton & Herrington, 2013). The youth, especially those graduating from tertiary institutions, are more inclined to corporate careers as opposed to entrepreneurial ones (Naong, 2011; Fatoki, 2014) due to the job security and attractive perks they offer. This is in spite of wide public perceptions of greater business opportunities for South African youths (Nieuwenhuizen & Groenewald, 2008; Kew et al., 2015).

The Zimbabwean scenario presents a divergent dimension to the problem of inadequate entrepreneurship activity. Although empirical evidence shows that many Zimbabwean youths are engrossed in necessity-driven and informal sector-based

income-generating activities (Zimstat Labour Survey, 2014), such undertakings are replicative and devoid of technological creativity and innovation (Murinda, 2014). The activities are a form of unproductive and destructive (when they are illegal) entrepreneurship whose only significance is ensuring the daily subsistence of participants (Ligthelm, 2013). The key missing qualities, which are creativity and innovation, are arguably necessary assets for sustainable 21st century business activities given the technical sophistication that typifies exemplary business enterprises in the contemporary world.

The irony in the Zimbabwean set-up is noted in the reality that some youths involved in informal sector activities possess good academic qualifications, which are credentials that positively correlate with the founding of opportunity-driven and growth-oriented business start-ups (Wu & Wu, 2008; Van Praag & Van Stel, 2013). While the youth can subsist on these routine income-generating undertakings, amidst an environment of joblessness and poverty, such indulgence does not match the amount of resources committed and expectations of those investing in human capital development. In the absence of practical employment opportunities, one would expect college graduates to engage in growth-oriented business activities that reflect these graduates' highly developed entrepreneurial capabilities as business founders. However, authentic entrepreneurship among graduates appears to be rare, thus indicating a lack of appropriate skills due to exposure to inappropriate education (Kew et al., 2015). The following sub-section details the unique geographical contexts of the research problem explored in this study.

1.2.1 Overview of the Zimbabwean context

Although the Zimbabwean tertiary education has always made reference to entrepreneurship, since the mid-1980s, the first bold moves towards deepening entrepreneurship at the college level were made around the year 2000. The post-2000 period witnessed the Zimbabwean government taking deliberate steps to support the teaching of entrepreneurship at local tertiary education institutions (Ministry of Higher Education and Technology Strategic Plan, 2010). This followed findings from the 1998 Presidential Commission of Inquiry into the status of the education sector in

Zimbabwe, which highlighted that the then existing curricula prioritised academic aspects at the expense of occupational skills (Nziramasanga, 1999). The Commission concluded that that the prevailing curricula prepared students more for organisational employment rather than self-employment or entrepreneurship.

In the face of a shrinking job market and the consequent inability to provide employment opportunities to graduates, the then Ministry of Higher Education and Technology decreed that all polytechnic students taking a path of study at the national certificate level of the Higher Education Examination Council (HEXCO) must enrol for the Entrepreneurship Skills Development subject as a precondition for graduation in 2011. The aim was to equip students with self-reliance skills and to align students' skills base to the demands of the prevailing economic conditions. Since then, all Zimbabwean polytechnic students are expected to undergo entrepreneurship education. Universities and Institutes of Technology are also at the forefront of instilling entrepreneurial values in students by offering whole degrees or course components in entrepreneurship and small business management. For example, the Chinhoyi University of Technology (CUT) and Lupane State University (LSU) offer degree programmes in entrepreneurship while the Harare Institute of Technology (HIT) and the National University of Science and Technology (NUST) host technopreneurship centres (HIT Yearbook, 2015; LSU Yearbook, 2015; NUST Yearbook, 2015; CUT Yearbook, 2016). This, therefore, indicates the existence of government and other stakeholders' deliberate policy interventions to promote new business start-ups by college graduates, amidst high unemployment, underemployment, subdued economic performance and poverty.

Nevertheless, the inability of the current entrepreneurship education to instil effective entrepreneurship and innovation qualities has raised serious concerns about the social relevance of entrepreneurship education (EE) in the country. Recent studies on entrepreneurship education in Zimbabwe question the effectiveness of such education in its current form (Mauchi, Karambakuwa, Gopo, & Kosmas, 2011; Hosho, Muguti, & Muzividzi, 2013). After all, entrepreneurship education is not provided across the different educational levels of the country, with only polytechnics and vocational

training centres offering such compulsory training. Although some university degree programmes offer optional courses and subjects in entrepreneurship and small business management, there is no entrepreneurship education offered at the lower levels of the education system. Such a situation is inimical to constructing a culture of voluntary entrepreneurship (that is, *entrepreneurship-by-choice*) instead of survivalist entrepreneurship (that is, *entrepreneurship-by-necessity*). One may thus question the efficacy of the existing educational framework for entrepreneurship and whether there is enough technological innovation support in entrenching substantial opportunity-driven and growth-oriented entrepreneurial intentions and culture. Hence, there is need to generate more robust research on how to groom potential and nascent entrepreneurs by enhancing the initiation of innovative and growth-oriented entrepreneurship by school-leavers and college graduates.

1.2.2 Overview of the South African context

Statistical trends on the total entrepreneurial activity (TEA) of South Africa (SA) in the past five years are disturbing. According to Turton and Herrington (2013), South Africa recorded a drop in TEA from 9.1 % in 2011 to 7.3% in 2012. These figures are lower than the mean TEA level of 14.3% for other efficiency driven countries such as Brazil, Russia and China that were recorded during the same period. The country recorded the lowest rate (15%) of youth entrepreneurship intentions amongst ten Sub-Saharan countries who participated in the same GEM survey, yet South Africa recorded the highest rate of youth unemployment rate (48% of economically active population component) compared to other countries such as Botswana, Ghana and Uganda that participated in the study (Van Aardt, 2012; Turton & Herrington, 2013). In fact, the Department of Trade and Industry highlights that youth unemployment constitutes 73% of the total unemployment rate in South Africa (Department of Trade and Industry, 2013).

While some South African youths have positive attitudes towards entrepreneurship and consider it a good career choice, many do not intend to be entrepreneurs, partly because of the lack of successful role models and the prevalence of uninspiring survivalist businesses in their vicinity (Nicolades, 2011; Preisendörfer, Bitz, &

Bezuidenhout, 2012; Dockel & Ligthelm, 2015). Hence, the lack of success in existing entrepreneurial ventures dampens the South African youths' self-efficacy and self-confidence in becoming innovative entrepreneurs.

There is a positive correlation between youth self-perception of entrepreneurial capabilities and levels of education attained - entrepreneurship education included (Turton & Herrington 2012). As such, entrepreneurship education is considered to boost youth self-efficacy and self-confidence to engage in new venture creation. An examination of the South African educational curricula reveals that the country lacks a dedicated compulsory entrepreneurship education policy that runs across all levels of its education sector (Turton & Herrington, 2013). Thus, entrepreneurship education only forms part of some courses of study at tertiary education level rather than a fully-fledged programme that constitute the flagship of university education. This, to some degree, explains the lower levels of entrepreneurship self-efficacy, intentions to and the actual entrepreneurial activity amongst South African youth (Groenewald, 2015).

Whereas statistical rates for entrepreneurial intentions and activity amongst youth in South Africa are low, there is a widespread perception of market opportunities for potential youth entrepreneurs (Nieuwenhuizen & Groenewald, 2008, Turton & Herrington, 2013). One reason for this perception is the youth's greater access to current market information through a wider use of the latest information technology, which is a tool that they can creatively use to their competitive advantage if they were to set up new business ventures (Turton & Herington, 2013).

1.3 KEY CONSTRUCTS

It is significant to clarify the following important terms which were extensively used in the current study.

- *Entrepreneurship*-The notion of entrepreneurship is multi-faceted and complex, making it difficult to come up with a single definition capturing all its aspects. However, many of its proposed definitions emphasise new venture creation as being central to entrepreneurship (Timmons, 1989; Kuratko & Hodgetts, 2009;

Kuratko, 2010. In this study, entrepreneurship is taken as the willingness and ability to assume the risk of starting and managing a business in return for profit.

- *Entrepreneurship education*- The deliberate act of equipping individuals with skills, mind-sets and values relating to starting and managing a business venture (Steenekamp, 2013).
- *Entrepreneurship intention* - The willingness to start and manage a business venture in the future (Thompson, 2009; Uddin & Bose, 2012).
- *Technological creativity*-The inclination towards experimenting with new ideas and ways of doing things with or without technology so as to generate scientific, economic and cultural solutions to everyday challenges (Rambe, Ndofirepi & Dzansi, 2015).

1.4 MOTIVATION OF THE RESEARCH STUDY

The above-noted conditions in SA and Zimbabwe provide the impetus for a rigorous investigation of determinants of entrepreneurial intentions and actual entrepreneurial behaviour of youths, especially students who are exposed to entrepreneurship in their tertiary education. Literature affirms that entrepreneurship education at educational institutions commonly forms one of national governments' sustained efforts to inspire entrepreneurial intentions and activities amongst the vulnerable groups such as the youth (Katz, 1994; Nkirina, 2010; Ball, 2012; DeJaeghere & Baxter, 2014). Since South Africa and Zimbabwe have and continue to invest considerably in the financial, intellectual and infrastructural resources of entrepreneurship education, it becomes mandatory to investigate the effectiveness and relevance of such education if both countries are to generate entrepreneurially oriented graduates, whose businesses contribute to addressing the high unemployment rates confronted by both countries. Therefore, entrepreneurship education graduates would be expected to possess the knowledge, spirit and abilities to start and operate a business venture, and demonstrate commitment to engage in innovative, opportunity-driven and development-oriented entrepreneurship activities when compared to their counterparts without such exposure (Urban, 2006; Rideout & Gray, 2013; Zhang, Duysters & Cloudt, 2014). Despite this expectation, there is a paucity of robust research on the effectiveness of entrepreneurship education in generating

entrepreneurship intentions and actual entrepreneurship in the Southern Africa context, hence this study.

Although there is extensive research on the impact of entrepreneurship education on entrepreneurial intentions of students from across the world (Iacobucci & Micozzi, 2012; Fayolle & Liñán, 2014; Hattab, 2014; Malebana & Swanepoel, 2015), the area remains a niche for further academic inquiry in emerging economies where determinants of entrepreneurial intentions need rigorous investigation. According to Bruton (2008:2), "...the setting today can be summarised as: what is known from the world's developed economies may not readily apply to entrepreneurship in emerging economies plus there is only limited research directly on these environments". This observation suggests that there is scope to interrogate the psychological states and conditions under which entrepreneurial intentions and actual entrepreneurship thrive in emerging economies that are confronted with the triple challenges of poverty, inequality and unemployment.

Scholars have, in the recent past, shown interest in understanding the mental characteristics and processes that urge individuals to recognise and act on entrepreneurial opportunities (Sanchez, Carballo & Gutierrez, 2011; Hashemzahi & Lashgari, 2013). Entrepreneurship intentions are one such element that is proposed and demonstrated as the best forecaster of future entrepreneurship behaviour of individuals (Urban, 2006). The logic is that individuals exhibiting high entrepreneurship intentions are more likely to engage in entrepreneurial behaviour than those showing lower levels, and vice-versa. The contrast of this also holds true that the demonstration of entrepreneurial intentions does not guarantee actual entrepreneurial behavior as psychological motivations and intentions to start new ventures shift as opportunities change across students' lives. These mixed views provided further support for more indepth studies that examine the connection between determinants of entrepreneurship intentions (such as entrepreneurship education), entrepreneurship intentions and actual entrepreneurial behaviour.

Some of the previous research on entrepreneurship behaviour focused largely on the influence of demographic and psychological factors, with the results showing a weak predictive and explanatory power of the cited independent variables (Gerba, 2012; Sessen, 2013; Farashah, 2015). However, researchers have recently shifted focus from personal demographic factors to the connection between creativity and entrepreneurship intention of individuals, with preliminary findings revealing positive correlations (Hamidi, Berglund & Wennberg, 2008; Hansen, Lumpkin & Hills, 2011, Zampetakis, Gotsi, Andriopoulos & Moustakis, 2011). Such a link is economically significant given the contemporary trend towards entrepreneurship and innovation-driven economic systems (Bruton, 2014). These studies were, however, conducted in the developed countries, thus it remains unclear whether similar results would obtain in emerging economies.

While acknowledging the potential effects of numerous endogenous and exogenous variables in shaping entrepreneurship intentions of individuals, existing entrepreneurial intention models tend to overlook the important relationship between technological creativity and individual entrepreneurship intentions (Bird, 1988; Ajzen, 1991; Krueger, Reilly, & Carsrud, 2000; Franke & Luthje, 2003). Moreover, although there is a quest to enhance entrepreneurship activity in emerging African economies, the joint effects of technological creativity and entrepreneurship education on the entrepreneurial intentions of students remain under-explored in literature. This situation prevails in spite of the possibilities of creativity and entrepreneurship education as pertinent to the effective transfer of key inventories of entrepreneurial skills to learners. This is crucial in view of the current socio-economic developments, which demand graduates with innovative and entrepreneurial mind-sets and capabilities, qualities reported as lacking amongst school-leavers (Lourenço, Taylor, & Taylor, 2013).

1.5 CONCEPTUAL MODEL OF THE HYPOTHESISED RELATIONSHIPS

Proponents of entrepreneurship education seek to raise entrepreneurial awareness, knowledge, capabilities, intentions and ultimately behaviour among students. These goals are part of efforts to solve socio-economic difficulties like poverty and

unemployment in communities (Maritz & Brown, 2013; Rideout & Gray, 2013; Arko-achemfuor, 2014; Malebana & Swanepoel, 2015). Findings from some psychology and entrepreneurship research studies demonstrate that it is possible to enhance entrepreneurial behaviour of students through exposing them to entrepreneurship education (Ajzen, 1991; Engle et al., 2010; Mueller, 2011; Gerba, 2012; Fretschnner & Weber, 2013; Walter, Parboteeah & Walter, 2013; Malebana & Swanepoel, 2015). This partially explains the popularity of entrepreneurship courses in tertiary education institutions across the globe.

A prominent model that explains the logic expressed in the preceding paragraph is the Theory of Planned Behaviour (TPB) by Ajzen. According to the theory, entrepreneurial behaviour is predicted by the strength of predated entrepreneurship intentions whose immediate determinants are as follows: *attitude towards entrepreneurship*, *subjective norms* and *perceived behavioural control*. To the extent that external factors like entrepreneurship education can influence entrepreneurship intentions and behaviour, such effect only comes through these three mentioned immediate determinants of intention (Liñán, 2004; Liñán et al., 2011; Lorz, 2011; Gerba, 2012; Fretschnner & Weber, 2013). In other words, only attitude, subjective norms and perceived behavioural control have a direct effect on one's intentions to act. All other factors, apart from these three, have an indirect effect.

However, results from other studies suggest that factors such as psychological traits (Ferreira et al., 2012; Gerba, 2012) and demographic variables (Davidsson 1995; Siu & Lo, 2013), at times, exert some direct influence on entrepreneurship intentions and subsequently entrepreneurship behaviour. Thus, the omission of demographic and psychological variables from the TPB as part of the determinants of entrepreneurship intentions is contentious.

The current study proposes a conceptual model of hypothesised relationships which recognises the potential influence of psychological and demographic variables on entrepreneurship intentions, but only includes them as control factors whose influence

on entrepreneurship intention is to be isolated. The conceptual model is depicted in Figure 1.1.

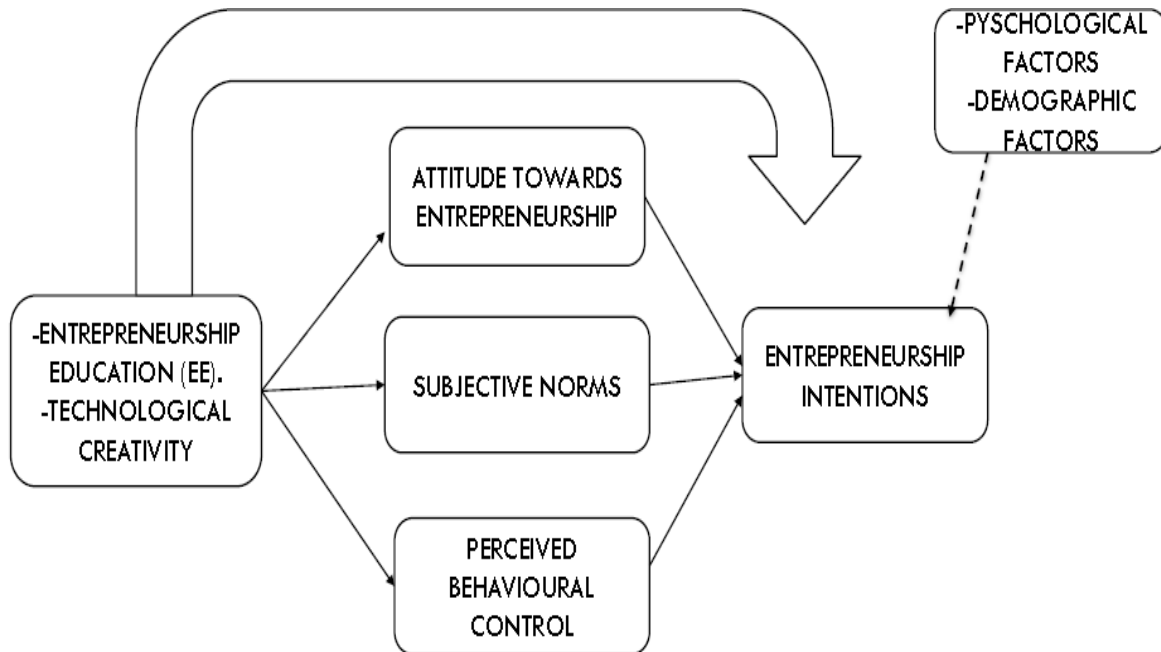


Figure 1.1 Proposed conceptual model for hypothesised relationships

While recognising the influence of many factors on entrepreneurship intentions, the current study places more emphasis on the effect of entrepreneurship education and technological creativity. This study argues that exposure to appropriate entrepreneurship education and stimulation of technological creativity enhances the overall entrepreneurship intention of college students. The primary proposition is that an effective combination of technological creativity and entrepreneurship education will enhance entrepreneurship intention and create more relevant and workable entrepreneurial activity, which could assist in resolving Zimbabwe and South Africa’s socio-economic maladies.

1.6 PROBLEM STATEMENT

The challenges of widespread unemployment, underemployment, shrinking job markets and poverty affecting numerous school-leavers and tertiary education

graduates in both South Africa (Statistics South Africa, 2014) and Zimbabwe (Bhebhe & Mahapa, 2014; Rusvingo, 2015) have led some scholars to recommend self-employment and entrepreneurial careers for students and school-leavers as alternatives to formal employment (Mushipe, 2013; Shambare, 2013; Fatoki, 2014; Masinire, 2015). New venture creation has thus been coined as a solution to school leavers and graduate unemployment as well as a way to promoting sustainable livelihoods (Kew et al., 2015). However, the incubation of new business is never a quick fix, given its highly technical nature and the broad range of intellectual, business and project management skills, qualities and mind-sets demanded of potential business founders (Rico et al., 2013). Despite entrepreneurship's overarching complexity, many of the characteristics that trigger it are transferrable through exposure to entrepreneurship education and training, whose aim is to augment the entrepreneurial culture and reduce idleness, foster an active economy and fight poverty in the social order (Javalgi & Todd, 2011).

Notwithstanding the overwhelming belief in the potency of entrepreneurship education in achieving enhanced entrepreneurship intentions, there is a lack of conclusive evidence on the exact impact and magnitude of entrepreneurship education on the entrepreneurship intentions of students as extant literature on this subject shows inconsistent results (Oosterbeek et al., 2010; Singh & Verma, 2010; Von Graevenitz et al., 2010; Hill, 2011). Hence, while some studies show a positive correlation between students' exposure to entrepreneurship education, others reveal negative results. In addition, there is evidence of the hesitancy and blatant failure of entrepreneurship education graduates to adopt entrepreneurship in South Africa and Zimbabwe (Murinda, 2014; Simango, 2015; Kuwaza, 2016). As a result, there is need to explore further possible combinations of factors that may enhance the entrepreneurial intentions of students, if they are to become future economic players who contribute to the eradication of unemployment and poverty.

Although the relationship between creativity and entrepreneurship intention of students (Zampetakis & Moustakis, 2006; Zampetakis, 2008; Zampetakis, Gotsi, & Andriopoulos, 2011, Samuel, Ernest & Awuah, 2013; Ahlin, Drnovšek & Hisrich 2014),

on the one hand, and entrepreneurship education and entrepreneurship intentions (Maritz & Brown, 2013; Pouratashi, 2015), on the other, have been explored independently in past research studies, no concerted research effort has been taken in the exploration of the combined influence of entrepreneurship education and technological creativity on the entrepreneurial intentions of graduates. This study sought to fill this research lacuna by postulating that: The integrated effects of entrepreneurial education and technological creativity of tertiary education students in Zimbabwe and South Africa has the potential to improve their entrepreneurial intentions. Such intentions are pivotal to the creation of technologically innovative and growth-oriented entrepreneurship behaviour.

Hence, the problem for this study is: *our limited knowledge of the impact of a combined influence of technological creativity and entrepreneurship education on the entrepreneurial intentions of students at two tertiary education institutions in South Africa and Zimbabwe.*

1.7 AIM OF THE STUDY

The aim of the study is to contribute to entrepreneurial knowledge through an in-depth exploration of the combined influence of technological creativity and entrepreneurship education on the entrepreneurship intentions of students at selected tertiary educational institutions in South Africa and Zimbabwe. The study contributes a conceptual model of entrepreneurship intention premised on antecedents of entrepreneurship intention such as entrepreneurship education and technological creativity mediated by attitude, subjective norms and behavioural control. The model also comprises other personal demographic and psychological factors and entrepreneurship intention. The model seeks to extend the Theory of Planned Behavior by introducing other determinant factors (such as technological creativity and entrepreneurship education) to its original constructs (namely attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

The foundation of the model is that student commitment to new venture creation (NVC) in their post-tertiary education life is not a chance event but is a result of a considered

entrepreneurship decision arising from entrepreneurship education and an inclination towards experimenting with new ideas, especially technological creativity.

1.8 RESEARCH QUESTIONS

The study sought to address the following research questions:

1. *Do the students exposed to entrepreneurship education, at particular tertiary institutions in South Africa and Zimbabwe, intend to engage in entrepreneurship after completing their studies?*
2. *Are there any statistically significant differences in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions?*
3. *Are there any significant relationships between student exposure to entrepreneurship education and the immediate determinants of entrepreneurial intentions (i.e. attitudes, subjective norms, perceived behavioural control on entrepreneurship)?*
4. *Are there any significant relationships between technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions?*
5. *Do entrepreneurship education and technological creativity predict the immediate determinants of entrepreneurship intention (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions?*
6. *Do the proposed immediate determinants of entrepreneurship intention (i.e. attitudes, subjective norms, perceived behavioural control) predict the actual entrepreneurship intention levels of students at particular Zimbabwean and South African tertiary education institutions?*
7. *Do entrepreneurship education and technological creativity directly predict the entrepreneurship intention levels of Zimbabwean and South African tertiary*

education students when personal demographic and other psychological factors are controlled?

The preceding research questions were generated after reviewing the literature and observing research gaps regarding the factors that determine entrepreneurship intentions (see Section 5.5).

1.9 RESEARCH HYPOTHESES

Specific hypotheses were formulated in order to address research questions 2 to 7. No hypothesis was formulated for research question 1 because of its descriptive nature and thus did not require inferential statistics to resolve it. Hence, the set hypotheses were as follows.

H₀1 There is no statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

H_a1 There is a statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

H₀2 There are no significant relationships between particular Zimbabwean and South African tertiary students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

H_a2 There are significant relationships between particular Zimbabwean and South African tertiary students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

H_o3 There are no statistically significant relationships between Zimbabwean and South African tertiary students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

H_a3. There are statistically significant relationships between Zimbabwean and South African tertiary students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

H_o4 EE+TC do not predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, and perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

H_a4 EE+TC predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

H_o5 The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) do not influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

H_a5 The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

H₀₆ There is no direct predictive relationship between entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected Zimbabwean and South African students, controlling for demographic and psychological factors.

H_{a6} There is a direct predictive relationship between entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected Zimbabwean and South African students, controlling for demographic and psychological factors.

1.10 RESEARCH METHODOLOGY

Since Chapter 6 provides a detailed research methodology adopted in the study, this section renders a summary of this research methodology. The fact that the purpose of this study was to unravel the relationships between technological creativity, entrepreneurship education and entrepreneurship intentions of students at South African and Zimbabwean tertiary institutions, necessitated the use of a positivist epistemology in this empirical, quantitative investigation. A positivist epistemology seeks to validate existing knowledge through empirical findings gathered through scientific methods (Bryman & Bell, 2015).

Since no rigorous previous studies have been conducted to uncover the relationships between technological creativity, entrepreneurship education and entrepreneurial intentions of tertiary students while drawing on cross-country comparative studies/analysis, this study employed an exploratory approach to ascertain the collective impact of technological creativity and entrepreneurship education on the entrepreneurship intentions of students at particular South African and Zimbabwean tertiary institutions. An explorative study is deemed appropriate when there are few or no prior studies that would have addressed a particular research problem (Saunders, Lewis & Thornhill, 2014).

Given that a quantitative study seeks to gather numerical data from a large number of respondents, structured questionnaires were considered as most appropriate for collecting respondents' views on the variables presented in the conceptual model. In

addition, the researcher, in his interest to solicit the views of entrepreneurship students enrolled at both South African and Zimbabwean tertiary institutions, chose to investigate the entrepreneurship students at the Central University of Technology (CUT), Free State and Kwekwe Polytechnic (Zimbabwe) in this study.

1.11 ETHICAL CONSIDERATIONS

A cursory presentation of the narrative of the ethical considerations adopted in this study is rendered in this section, given that a more detailed outline is presented in the study's chapter on the methodology. Nevertheless, the researcher negotiated access to respondents by seeking the approval of his research by the authorities at Kwekwe Polytechnic (Zimbabwe) and the Central University of Technology, Bloemfontein (South Africa), before conducting the study. After the approval of the research by the Business and Faculty Research Ethics Committee at the CUT, where the researcher is registered as a doctoral candidate, permission to conduct the research was sought and secured from the CUT's Institutional Planning office.

Any credible scholarly research requires the voluntary participation of respondents, hence, a request for the consent from students at the Bloemfontein campus (SA) and Kwekwe (Zimbabwe) campuses participate was sought, just as they were informed of their right to withdraw from the study without any physical and psychological harm. Other ethical considerations considered in this study are:

- The respondents were informed of the purpose of the study prior to its commencement.
- The researcher undertook to guarantee the anonymity of respondents by reporting the results in aggregate form to protect their respondents' individual identities.
- The researcher assured and maintained the privacy of respondents by conducting the research at times convenient to respondents.

1.12 SIGNIFICANCE OF THE STUDY

Theoretically, this study contributes to entrepreneurship intention theory, which has so far neglected the collective impact of entrepreneurship education and technological creativity on entrepreneurship intentions. The researcher also suggests a model of entrepreneurship intents for tertiary education institutions based on entrepreneurship education and technological creativity as significant determinants of entrepreneurship intents and capabilities in modern society. Most importantly, the study coins a new concept technological creativity, which is not only conceptualised in view of mainstream literature but imputed into a proposed model, which was tested empirically in the study.

Practically, the outcome of this study feeds into the human capital training and entrepreneurship development process at tertiary institutions in Zimbabwe and South Africa, in line with the demands of modern and knowledge-based economies. This is valuable to countries beset with poverty, low formal employment levels and a glut of tertiary education graduates engaging in inferior income generating activities in the informal sector. In addition, entrepreneurship enhances economic growth, social empowerment and the global competitiveness of national economies.

1.13 LIMITATIONS

A major limitation is the cross-sectional nature of the study. This study examined entrepreneurial intentions of students at specific points in time as indicators of the effectiveness of entrepreneurial education and training efforts. Though entrepreneurial intent theories claim that intention predates entrepreneurial action, not all students who intend to become entrepreneurs will pursue intention with action. Some will remain idealists while others take entrepreneurial action. Thus, a cross-sectional study does not enable sustained verification of whether a student intending to engage in entrepreneurship will eventually do so. With increased resources availability, the conduct of a longitudinal study would allow researchers to establish whether entrepreneurial intentions will trigger actual entrepreneurial activity and sustained entrepreneurial behavior.

The generalisability of the findings across both countries of study would be plausible if the study incorporated participants from a range of tertiary institutions from both countries including those enrolled in non-entrepreneurial subjects. Nonetheless, the exploratory nature of the study and the paucity of resources constrained a consideration of multiple tertiary institutions from both countries. That said, a consideration of tertiary students from two institutions was considered to provide a rich point of departure to understanding the state of entrepreneurship intentions of students from both countries.

The researcher thought that the strong tradition of training graduates for particular professional occupations at the CUT closely matches Kwekwe Polytechnic's strong vocational orientation, thus providing strong points of comparisons of both institutions notwithstanding their different contextual and structural differences. Furthermore, the researcher informally observed that the introductory courses offered at the two participating institutions were compulsory, taught and evaluated using similar methods i.e. lectures and written examinations respectively. Also, the target population at both participating institutions were in their first year of study and were drawn from similar fields of study. More importantly, the students from both institutions faced similar problems of job scarcity. This further strengthens the assumption of similarity among respondents as well as justifying the use of the two institutions as cases of the study.

One-point worth noting, however, is that equivalence in the level of development of the countries involved in the study, as well as the resource endowment of the participating institutions cannot be presumed. In spite of their potential influence on the entrepreneurship intentions of students, the researcher reasoned that the mentioned disparities were not excessive to the extent of negating the usefulness of the outcome of the current, exploratory study. However, this limitation can be mitigated through a separate comparative study in the future encompassing the said factors as mediating variables.

1.14 DELIMITATION OF THE STUDY

The delimitations of the study included the fact that;

- The empirical study focused on students at the Kwekwe Polytechnic (Zimbabwe) and the Central University of Technology (South Africa) only. No other additional institutions were considered in this study due to resource constraints.
- Only students who have completed or were about to complete an introductory subject or course in entrepreneurship formed part of the target population.

1.15 CHAPTER OUTLINE

This thesis is arranged into the following seven chapters.

- Chapter 1, outlines the context of the problem, conceptual framework, problem statement, research questions and hypotheses, the methodology, key terms/concepts and the structure of the entire thesis.
- Chapter 2 deals with the concepts of entrepreneurship.
- Chapter 3 reviews literature on entrepreneurship education.
- Chapter 4 is devoted to the technological creativity variable.
- Chapter 5 reviews the literature on entrepreneurship intentions.
- Chapter 6 presents the research methodology adopted in the study.
- Chapter 7 is devoted to the presentation, interpretation and discussion on the results.
- Chapter 8 enunciates the conclusions and recommendations for policy and practice, and presents implications for further research.

1.16 SUMMARY

This chapter focused on the context of the investigation, articulated the research problem, and presented the research questions, hypotheses, methodology, the contribution of the study and ethical issues affecting the study. The next chapter reviews the literature on entrepreneurship.

CHAPTER 2: ENTREPRENEURSHIP

INTRODUCTION			
CONCEPTUALISATION OF ENTREPRENEURSHIP	DEFINITION OF ENTREPRENEURSHIP	MACRO-APPROACH	THEORISATION OF ENTREPRENEURSHIP
	ENTREPRENEURSHIP AND RELATED CONCEPTS		
	CHARACTERISATION OF ENTREPRENEURS		
	TYPES OF ENTREPRENEURS	MICRO-APPROACH	
	IMPORTANCE OF ENTREPRENEURSHIP IN DIFFERENT		
	HISTORICAL EVOLUTION OF ENTREPRENEURSHIP		
SUMMARY			

2.1 INTRODUCTION

The previous chapter's introductory remarks underscored the escalating rates of youth under-employment and unemployment in Zimbabwe (Zimstat Labour Survey Report, 2014) and South Africa (Statistics South Africa, 2014) amidst a subdued pace of quality jobs creation, a phenomenon which is ubiquitous among emerging economies (United Nations 2013; United Nations Conference on Trade and Development-UNCTAD, 2014; World Bank, 2014). At the same time, the chapter highlighted the significance of entrepreneurship as a potential generator of economic growth and a cure for some of society's problems like unemployment and poverty. Hence, this chapter addresses the concept of entrepreneurship.

2.2 MEANING OF ENTREPRENEURSHIP

Bygrave and Hofer's (1991:13) assertion that 'good science has to begin with good definitions' unnerves entrepreneurship scholars because of the perennial lack of a universal definition of entrepreneurship. Some scholars claim that the absence of a precise definition puts any scientific study on a flawed starting point as it is difficult to measure that which is not accurately defined (Mishler, 1979; Anderson, Dodd & Jack, 2012; McMullan & Kenworthy, 2015). Although the term "Entrepreneurship" is widely adopted in entrepreneurship, management and business management literature, there is a lack of consensus on its precise meaning (Nodoushani & Nodoushani, 2000; Stam & Noteboom, 2011; Carland, Carland & Carland, 2015). This is ironic given the substantive growth of entrepreneurship research that spans over two decades (Davidsson, 2003; Kuratko, 2004, 2005; Izedonmi & Okafor, 2010; Shaver, 2012; Morris, Kuratko & Cornwall, 2014).

Urban (2011) attributes the lack of a common definition to the way in which the subject is characterised by wide and varied activities. Stokes, Wilson and Mador (2010) acknowledge the diverse nature of entrepreneurship activities and suggest that the entrepreneurship concept should be viewed from three perspectives, which are as a *process*, *behaviour* and an *outcome*. The researcher therefore adopts a similar approach in presenting the various definitions of entrepreneurship, as noted in the next sub-section.

2.2.1 Defining entrepreneurship

2.2.1.1 Process-based definitions

The process-based characterisations highlight the step-by-step nature of entrepreneurship and the common aspects involved in the phenomenon, which include opportunity recognition, idea generation, drawing up of the business plan, and implementation (Bygrave & Hofer 1991, 2007; Hirsch, Peters & Sherperd, 2010). This definition follows two schools of thought; one guided by Schumpeter’s (1934) theory of innovation and the other, which views entrepreneurship as driven by opportunity recognition (Kirzener, 1973; Lim & Xavier, 2015; Shrader & Hills, 2015). The definitions of entrepreneurship founded on the Schumpeterian school (see Table 2.1) conceive the entrepreneurship process as encompassing the deliberate disruption of product markets through human creativity, which trigger value-creating opportunities. Therefore, according to this process perspective, entrepreneurship denotes a series of pioneering, ground-breaking events comprising new ideas, products, technology, ways of doing things and other problem solving novelties (Hoskisson, Covin, Volberda & Johnson, 2011; Drucker, 2012).

Table 2.1 Shumpeterian based definitions

Author	Definition
Peter Drucker 1985 in (Kariv, 2011:24).	“The practice of systematic innovation.”
Hirsch & Peters, (2002:3).	“Entrepreneurship is the process of creating something different with value by devoting the necessary time and effort; assuming the accompanying financial, psychological, and social risks; and receiving the resulting rewards of monetary and personal satisfaction.”
Kuratko & Hodgetts, (2009:30).	“...a dynamic process of vision, change and creation...”

The Shumpeterian definitions presented in Table 2.1 demonstrate a marked attempt at distinguishing entrepreneurship from general business ownership. Rather than just manage business resources, entrepreneurs are here portrayed as initiating and generating novelties. Arguably, it is this brand of entrepreneurship that drives vibrant economies and would bring more advantages to economically struggling countries such as Zimbabwe. However, critics of this school of thought often point out the

negative effects of creative destruction, which is an accompanying feature of Shumpeterian entrepreneurship.

Contrastingly, the Kirzner school definitions (See Table 2.2) portray the entrepreneurship as involving the identification of existing gaps in the existing or emerging market and then creatively combining resources to fill that opportunity. The emphasis here is on taking advantage of already existing opportunities as opposed to rocking the market so as to create opportunity. The following definitions fall under this category.

Table 2.2 Kirzner based definitions of entrepreneurship

Author	Definition
(Wiklund, 1998:3).	“Entrepreneurship is taking advantage of opportunity by novel combinations of resources in ways which have impact on the market”.
(Carsrud & Brännbac, 2007:10).	“Entrepreneurship is the process by which individuals-either own or inside organisations-pursue opportunities without regard to the resources that they currently control”.
(Ndedi, 2009: 465)	“...a willingness to take calculated risks, both personal (time, intellectual) and financial, and then doing everything possible to fulfil one’s goals and objectives...”

The Kirzner based characterisation, as shown in Table 2.2 emphasises the stewardship role of entrepreneurs where they have to take charge of mobilising resources so as to pursue business opportunities. More often than not, the entrepreneur is responsible for taking risky decisions. The definitions adopt a management stand-point where the entrepreneur possesses particular traits like risk-taking propensity and creativity.

Regardless of the different stand-points under the process-based definition, more attention should be paid to common and complementary aspects of the preceding definitions rather than the differences so as to fully comprehend the entrepreneurship concept (Davidsson, 2003). The implication of that argument is that the two aspects of opportunity recognition and innovation are intertwined and not isolated. Hence, definitions combining the two aspects of opportunity recognition and innovation have

subsequently emerged. For example, Baum, Frese, Baron and Katz (2007) define entrepreneurship as a process that encourages the recognition, weighing and tackling of business opportunities such that new products and ways of doing things emerge in the ever changing markets.

2.2.1.2 Behaviour-based definitions

Behaviour-based definitions of entrepreneurship emphasize the unique actions of individuals (entrepreneurs) involved in the entrepreneurship process (See Table 3). The inference is that entrepreneurs do things differently from people who are non-entrepreneurs. This view is corroborated by Basu (2004) who contends that entrepreneurs have goals, such as readiness to pursue opportunity and the inclination towards generating novelties, which are distinct from those of non-entrepreneurs.

Even though the definitions presented in Table 2.3 emphasise behavioural aspects, overlaps with other categories of definitions can be noted. For instance, Drucker’s definition can easily fit under the Shumpeterian definitions which delineate entrepreneurship as a process associated with change and innovation.

Table 2.3 Behaviour-based definitions of entrepreneurship

Author	Definition
Timmons (1989:1)	“Entrepreneurship is the ability to create and build something from practically nothing. It is initiating, doing, achieving, and building an enterprise or organisation, rather than just watching, analysing or describing one. It is the knack for sensing an opportunity where others see chaos, contradiction and confusion”.
Drucker (1985:5)	“Entrepreneurship is associated with innovative and change-oriented behaviour”.
Morris et al. (2001:41)	“Entrepreneurship is opportunity-driven behaviour”.

2.2.1.3 Outcome-based definitions

This category of definitions of entrepreneurship emphasises the end-result of the entrepreneurship process and the behaviours of entrepreneurs (See Table 2.4). Some of the definitions under this category include the following:

Table 2.4 Outcome based definitions of entrepreneurship

Author	Definition
Low and MacMillan (1988:140)	“Entrepreneurship is the creation of new enterprise”.
Gartner (1988:12)	“Entrepreneurship is the creation of new organisations”.

The outcome-based definitions presented in Table 2.4 suggest that the defining feature of entrepreneurship is the establishment of an economic organisation as the means for pursuing market opportunities. However, such definitions are defective in that they exclude, from entrepreneurship, other activities which involve typical entrepreneurial activities, such as risk-taking, creativity and invention.

The preceding discussion provided a nomenclature of definitions of entrepreneurship. Although such categorisations are useful for bringing some structural classifications of an otherwise conceptually messy field, these subjective categories tend to emphasise conceptually minute differences at the expense of more significant similarities. For instance, the perceived distinction between Shumpeterian and Kirzernian definitions tend to magnify differences relating to the nature of entrepreneurship but elide the view that both schools of thought have the same objective, which is that of meeting market needs using creativity outputs. This, arguably, does not assist to the understanding of entrepreneurship as a cohesive whole but underscores the fragmentation of the discipline. An adequate definition that embraces all three proposed categorisations of entrepreneurship is, therefore, needed if the concept is to be holistically understood.

The following operational definition that highlights the process, behaviour and outcome traits of entrepreneurship is, as a result, adopted for the current study.

Entrepreneurship is a process where individuals acting as innovators or developers who identify and act on opportunities; converting those opportunities into practicable ideas; adds value through time, effort, money or skills; assumes the risks of the competitive marketplace to implement these ideas and realises the rewards from these efforts.

2.3 ENTREPRENEURSHIP AND RELATED CONCEPTS

One has to be cognisant of the meaning and distinctions of the entrepreneurship concept in order to fully comprehend any dimension of entrepreneurship research. The term entrepreneurship is frequently conflated with related terms that include self-employment and small business ownership. However, subtle distinctions exist between entrepreneurship and the closely-associated terms, even though the nature of the differences may not be obvious. For instance, Murphy (2011) attributes this lack of consensus to the dearth of a consistent foundational theory of the entrepreneurship concept. The next sub-section, therefore, illustrates that, although the terms share commonalities, there are salient distinctions that exist between them.

2.3.1 Entrepreneurship and self-employment

Entrepreneurs frequently find themselves working for themselves and this situation has resulted in the confusion of self-employment with entrepreneurship (Walter, Parboteeah, & Walter, 2013; Arko-achemfuor, 2014; Peprah, Afoakwah, & Koomson, 2015). However, regarding the two as synonymous is deficient in two respects. Firstly, it is important to note that one can be an entrepreneur without necessarily being self-employed (Sexton & Bowman, 1984). For instance, individuals may exhibit entrepreneurial qualities, whilst under the employ of somebody else, which is a phenomenon known as intrapreneurship or corporate entrepreneurship (Gundogdu, 2012; Fayolle & Liñán, 2014). At the same time not all self-employed people are entrepreneurs. For instance, an individual, wishing to continue earning a constant and stable income, may choose to use his or her business abilities by acquiring an existing enterprise rather than creating a new one. Such a person would have engaged in self-

employment without necessarily being entrepreneurial. In addition, conflating entrepreneurship and self-employment effectively locks out other forms of entrepreneurship such as academic and social entrepreneurship. These activities carry the key characteristics of entrepreneurs, which are innovation and risk-taking, but may not involve working for one's self (Lourenço, Taylor & Taylor, 2013; Mars, 2014). Hence, the preceding exposition shows that entrepreneurship is more wide-ranging, as it encompasses the creative pursuit of social causes, intrapreneurship, invention and innovation, than the narrow self-employment, even though both entail risk taking and some innovation traits.

2.3.2 Entrepreneurship and small business ownership

Entrepreneurship is at times inaccurately perceived as the same as small business ownership (Frederick & Kuratko 2010; Nieuwenhuzein, 2012) due to the number of shared characteristics that both possess. First, both small business owners and entrepreneurs seek to achieve profit through bearing calculated market risks (Carland, Hoy, Boulton & Carland, 2007), just as, second, entrepreneurs including small-business owners, possess businesses as well (Kuratko 2009). However, the similarities end there. There are subtle distinctions that exist between entrepreneurship and small business ownership. The small businesses subsist so as to profitably fulfil existing wants for products and services in the market. However, it is the entrepreneur who recognises those market gaps and turns them into business opportunities, thus leading to the creation and expansion of a business venture (Krueger Jr, 2000; Puhakka, 2012). This brings into perspective, Schumpeter's (1934) view that innovation forms the most prominent characteristic of an entrepreneur. Accordingly, one is only an entrepreneur if they are innovating, which is not always the case with small-business ownership.

According to Nieuwenhuzein (2012), a small-business owner may at times possess entrepreneurial qualities even though not all of them are entrepreneurs. In the same vein, not all entrepreneurs are small-business owners. For instance, some owners of intellectual property qualify as entrepreneurs without necessarily owning a business (Bresler, n.d.). If the definition is extended beyond business ownership, then

individuals within organisations who recognise and creatively respond to business opportunities qualify as entrepreneurs. The same applies to individuals in society who integrate innovation, originality and opportunity to deal with serious social and environmental problems.

Some scholars point out that one is a pure entrepreneur if he or she creates and manages an innovative enterprise that is not similar to any existing one (Baumol, 2005; Griffiths et al., 2012; Mayhew et al., 2012). Therefore, an individual who creates a business venture that is similar to those in existence ceases to be an entrepreneur even when the business venture comes into being. To this end, the individual becomes a small business owner or a manager (Kuratko, 2009). The insinuation here is that entrepreneurial firms are comparatively more risk-taking, and constantly focus more on innovation as compared to small businesses which are content with stability in sales and profits and uphold the business as usual approaches.

However, it should be stated that entrepreneurial ventures do not stay small and may grow into large corporations, thus drawing a distinct line between entrepreneurship and small business ownership (Carland et al., 2007). Further distinctions can be noted in that entrepreneurial ventures usually create relatively large amounts of wealth at a quicker pace compared to that of an ordinary small business. Therefore, it is a misnomer to equate entrepreneurship to small business ownership. In fact, Nieuwenhuzein (2012) gives emphasis to the fact that business endeavours like franchising, buying already existing enterprises or inheriting a business venture and continuing to run it as the previous owner do not amount to entrepreneurship. In light of the above, the governments of Zimbabwe and South Africa need to be clear on whether some of their policy interventions which they purpote to promote entrepreneurship actually do so, otherwise they simply encourage general business ownership.

2.4 CHARACTERISATION OF AN ENTREPRENEUR

The definition of an entrepreneur is contentious, as noted in the introduction of the concept entrepreneurship (Weber, 2012; Muofhe & Du Toit, 2011; Kuratko, 2014). This

lack of consensus, and at times confusion, can be attributed to the diverse fields that contribute towards the research field of entrepreneurship. Hence, descriptions of an entrepreneur depend on one's guiding perspective, context and interest. More than two and half decades ago, (Cunningham & Lischeron, 1991:45) lamented that "... we continue to know very little about entrepreneurs, even though there is much interest and many publications on the subject". Scholars continue to mourn the same dilemma relating to definitions of an entrepreneur because of this diversity and fragmentation (Muofhe & Du Toit, 2011).

A review of literature shows that current definitions of an entrepreneur commonly emphasise behavioural issues such as new business creation (Drucker, 1985), new business ownership and management (Cole, 1945), risk-taking (Cantillon, 1755), creativity and innovation (Shumpeter, 1934) as well as capabilities including opportunity recognition (Farsi et al., 2012), co-ordination of resources and change management (Mars, 2013), an emphasis which may add strain rather than cohesion in entrepreneurial research. Paradoxically, some definitions deem certain economic activities traditionally regarded as entrepreneurship as actually not part of it at all. For example, Gartner's (1988:12) definition that "an entrepreneur is an individual who undertakes to create a business venture" is problematic, because the author compounds the challenge by categorically claiming that entrepreneurship ends when a new venture is created. Thus, small business owners, second generation operators of businesses, franchisees, owner-managers and self-employed people who have been long touted as archetypes of successful entrepreneurship suddenly find themselves outside the entrepreneur category. Hence, other scholars have raised sentiments, in their reflection on the complexity of entrepreneurship research, to the effect that the diversity of definitions hampers in-depth comprehension of the entrepreneurship concept as well as growth in entrepreneurial research (Shane & Ventakataram, 2000).

The current study considers definitions from various schools of thought in an effort to arrive at a substantial understanding of what entrepreneurs are. Cunningham and Lischeron's (1991) categorisation of definitions of an entrepreneur is, however,

adopted in this study. These authors observe that entrepreneurs are frequently defined in the context of: (i) assessing personal qualities; (ii) recognising opportunities; and (iii) becoming change agents.

2.4.1 Entrepreneurs in terms of personal qualities

The definition of entrepreneurs in terms of personal characteristics stems from the now sceptically viewed traits of the entrepreneurship school of thought. This approach is premised on the perspective that there are certain identifiable and stable human qualities that distinguish entrepreneurs from non-entrepreneurs. It draws from the seminal work of McClelland (1961) who describes entrepreneurs as characterised by a need for achievement and risk-taking. Further, qualities such as boldness, daring, imagination and creativity (Lumpkin & Dess, 1996) also make-up the list. However, a review of the extant literature suggests that coming up with a collective set of traits that separate entrepreneurs from non-entrepreneurs is not a straight-forward affair. This is because no single entrepreneur possesses a complete set of the proposed defining characteristics, as succinctly captured by Drucker (1996:22) in the statement typifying entrepreneurs that, “some are eccentrics, others are painfully conformists; ...some have no more personality than a frozen mackerel”.

Although the traits theory's universal applicability is being questioned, some studies have revealed characteristics commonly observed amongst successful entrepreneurs. Rossouw and Nieuwenhuzein (2011) outline some of the key attributes of successful entrepreneurs as: (i) persistence; (ii) commitment to the enterprise; (iii) involvement in the enterprise; (iv) willingness to take risks; and (v) sound human relations. This list of attributes justifies the earlier made criticism of outcome-based portrayals of entrepreneurship that demonstrated that not only individuals who create or own economic entities should be classified as entrepreneurs, but only those who possess certain particular qualities and mind-sets.

Burns (2001) also proposes additional unique characteristics of entrepreneurs. These are:

- Internal locus of control,

- Need for independence and achievement,
- Vision, flair and self-motivation,
- Self-confidence,
- Being opportunistic, innovative, proactive, decisive and high-energy-oriented,
- Willing to take greater risks and greater uncertainty than non-entrepreneurs,
- Creative and innovative ability,
- Positive attitude and approach.

Burns (2001) is however quick to point out that any attempt to come up with unique characteristics of entrepreneurs is not a straightforward affair. This is because of the broad generalisations and methodological problems associated with measuring human psychological features.

Hence, the continued search of the unquestionable qualities of an entrepreneur demands that the existing evidence be treated with caution until such a time that a conclusive substantiation is gathered.

2.4.2 Entrepreneurs in terms of opportunity recognition roles

A number of contemporary depictions highlight market opportunity recognition and value creation as key aspects of an entrepreneur (Kourilsky & Esfandiari, 1997; Bennett, 2006; Hansen, Lumpkin, & Hills, 2011). Entrepreneurs create economic and socially transformative value for themselves and the community at large by identifying market opportunities and acting on them through generating new products and services (Schumpeter, 1934). Thus, innovation and creativity lie at the heart of such characterisations. One definition of entrepreneurship that emphasises the opportunity recognition nature of entrepreneurs states that 'entrepreneurship is a societal phenomenon or process of change that comprises of the components: 'identification, evaluation and exploitation of an opportunity; management of a new or transformed organisation in order to facilitate the production and consumption of new goods and services; and the creation of value through the successful exploitation of a new idea' (Stokes, Wilson & Mador, 2010:8).

The above-noted definition encompasses aspects such as the pursuit of economic opportunities, resource co-ordination and value-creation, which are critical to modern economies. Such human aspects, often demonstrated through creative and innovative business practices, can to a large extent help ameliorate the triple scourges of unemployment, poverty and social inequality which bedevil economies of countries such as Zimbabwe.

2.4.3 Entrepreneurs as change agents

Lucskiw (1998:6), in observations regarding the entrepreneur's *modus operandi*, intrinsic motivation and individual sense of meaning, observes that, 'Entrepreneurs as individuals are agents of change who break with existing ways of doing things in order to create what has not been created before.' The definition holds true in the case of innovative entrepreneurs who create economic value through generating evolutionary products, services and a new way of doing things. For instance, the initiation of the computer age by American entrepreneurs including Bill Gates and Steve Jobs conceivably triggered the product revolutions in the electronic industry which have brought about unimagined lifestyle changes to the contemporary society. This view is corroborated by Kirby's (2004: 511) depiction of entrepreneurs as "...undertakers who make things happen, and as a consequence, they disturb the status quo as change agents working as self-employed individuals in small businesses or as employees in large enterprises".

2.5 TYPES OF ENTREPRENEURS

As observed earlier, the multi-dimensional nature and consequent lack of a uniform characterisation of an entrepreneur leads to a multiple categorisation of entrepreneurship that depends on the perspective from which one would be looking from. According to Stokes, Wilson and Mador (2010:9) "...the context for entrepreneurship is highly differentiated, and there are all sorts of different and specialised accounts which focus on variables so diverse." Some of these categorisations are discussed in the ensuing sub-sections.

2.5.1 Opportunity driven entrepreneurs versus necessity driven entrepreneurs

Even though the categorisation is simplistic, entrepreneurship literature distinguishes opportunity-driven from necessity-driven entrepreneurs. Given the important role that entrepreneurship plays in the contemporary economy, understanding this dissimilarity is important for policy makers world-wide who are bent on promoting effective entrepreneurship that addresses socio-economic problems besieging their respective economies. Opportunity-driven entrepreneurs are entrepreneurs who are drawn into entrepreneurial activity by a perceived rewarding market opportunity (Williams, 2008; Chen & Yang, 2009). This means that an individual takes a conscious decision to indulge in a calculated risk so as to create value out of it. Thus, opportunity-driven entrepreneurs are willing to take bold risks in order to realise their goals (Volery, Müller, Oser, Naepflin, & del Rey, 2013; Bullough, Renko, & Myatt, 2014). They are usually willing to commit to large investments in order to reap higher returns in the future.

On the other hand, necessity-driven entrepreneurs are driven into entrepreneurship by negative external factors such as job loss, frustration with their current jobs or poverty (Krueger & Brazeal, 1994; Herrington & Kelley, 2012). Thus, these types of entrepreneurs come into existence to fulfil economic needs and as a result, business creation would be a means of survival. Therefore, these entrepreneurs are less likely to venture into more innovative, risk-taking and profitable ventures when compared to opportunity driven entrepreneurs. Such entrepreneurs are a common feature of the South Africa (Dzansi, 2004) and Zimbabwe business environment (Murinda, 2014). They manifest in a thriving informal sector businesses such as tuck shops and home industries. This observation corroborates the finding by Martínez et al. (2010) that necessity-driven entrepreneurship is more prominent in emerging economies as compared to the advanced and more sophisticated ones. Apart from that, necessity driven entrepreneurs do not need substantial capital investments in their businesses as compared to opportunity driven entrepreneurs.

2.5.2 Replicative versus innovative entrepreneurship

Baumol (2005) introduced a new dimension to the grouping of entrepreneurship discourse by drawing a distinction between innovative and replicative entrepreneurship. An innovative entrepreneur is one who brings up new ways of doing things to the business environment (Khalil & Olafsen, 2010; Griffiths et al., 2012; Hemmen, Alvarez, & Peris-ortiz, 2015), while replicative entrepreneurs are concerned with doing things the usual way (Stam & Nooteboom, 2011; Stenholm, Acs & Wuebker, 2013). Therefore, individuals involved in this form of entrepreneurship do not come up with new business models, but imitate and at times refine existing models to make them more efficient (Griffiths et al., 2012). While it is not the kind of entrepreneurship that will bring growth to a struggling economy, it may have a stabilising effect on society's livelihoods. A typical example of replicative entrepreneurship is ownership and managing a green grocer shop, which is a business form that has been in existence for a long time.

Innovative entrepreneurship introduces new products, services and processes, thus introducing new business models which add value to the production and distribution chain (Knudsen & Cokpekin, 2011; Montalvo, 2015). Hence, innovative entrepreneurship is intertwined with dynamism and growth, and enhances the competitiveness of economies in the process. Innovative entrepreneurship typifies modern knowledge-based economies that are essential to moving a country from a particular category (Audretsch, 2006). For instance, Singer, Amoros, and Arreola (2015) suggest that an improvement in the level of innovation within a country can propel the economy from being factor-driven to innovation-driven, which is important for global competitiveness.

While replicative entrepreneurs do not need as much support as innovative entrepreneurs, their importance is evidenced in their creation of employment and other types of economic activities (Baumol, 2005). One can only imagine how life in countries like Zimbabwe which have high unemployment levels could have been without opportunities for replicative entrepreneurship.

2.5.3 Business versus social entrepreneur

Frederick and Kuratko (2010) draw an important distinction between business and social entrepreneurs. While individuals in the two groups may share the same personality characteristics and use the same means (innovation and growth) to achieve their ends, they however seek to accomplish different objectives. Business entrepreneurs, on the one hand, are largely driven by the profit motive and thus seek to achieve economic objectives (Renko, 2013). On the other hand, the social entrepreneur endeavours to achieve community welfare goals (Chowdhury, 2012; Miller & Li, 2012; Renko, 2013). Therefore, social entrepreneurs creatively seek to solve social problems rather than maximise economic gains. Their endeavours are often deemed to be financially unprofitable and would otherwise have been ignored if they were left to commercial ventures.

2.6 HISTORICAL EVOLUTION OF ENTREPRENEURSHIP

The pedigree of the entrepreneurship concept can be traced down to several fields of study from the social sciences (Rehn, Brannback, Carsrud & Lindahl, 2013) such as psychology, economics, sociology and education. As such, this diversity of origins explains the multi-dimensional descriptions of entrepreneurship. For instance, the economics discipline offers seminal, robust and the more relevant definitions of the concept (Nafukho & Muyia, 2010). Perhaps this explains the high standing that entrepreneurship is accorded in socio-economic policy discourses. Numerous eminent pioneer scholars in the field of entrepreneurship emerged from the economics field and chief among them are Cantillon (1934), Schumpeter (1934) and Schultz (1975). The historical contributions of the three scholars are discussed briefly below.

2.6.1 Cantillon

Cantillon's major contribution to entrepreneurship research is evident in his outline of the functions of entrepreneurship and associated risks (Albornoz, 2011). The French scholar identified an entrepreneur as anyone committed to bearing market associated risks (Piperopoulos, 2012). Risk taking is thus, from this viewpoint, a key defining trait of most entrepreneurs (Liñán, Rodríguez-Cohard & Rueda-Cantuche, 2011; Ferreira, Raposo, Rodrigues, Dinis & Paço, 2012; Wood, 2012). Given the constant change

and unpredictability in the entrepreneurial operating environment together with the accompanying risks, the majority of people involved in economic activity qualify as entrepreneurs (Mars, 2014).

Entrepreneurship, according to the Cantillonian view, is a wide-encompassing concept that is confined to new venture creation, ownership and other risk-bearing activities such as invention, pursuit of non-profit-making social causes and intrapreneurship. To illustrate this point, Lina (2013) argues that even individuals in academia who engage in innovation can be categorised as involved in entrepreneurship. The breadth of the Cantillonian view of entrepreneurship is such that it encompasses those activities that Professor William Baumol, in an interview with Mayhew, Simonoff, Baumol, Wiesenfeld and Klein (2012), termed destructive entrepreneurship. Such activities may include innovation and risk-taking for profit done in an unethical and/or illegal manner. Examples of such destructive entrepreneurship include unregistered car-boot based businesses selling fabrics and other wares and operating from unauthorised points, which are activities flourishing in major cities in Zimbabwe and South Africa. While they may be viewed as creative businesses providing employment and sustaining numerous families, such activities are often outlawed under municipal by-laws.

2.6.2 Schumpeter

Schumpeter's determinative contribution to entrepreneurship thought is depicted in the theory of economic development (Schumpeter, 1934). This theory portrays entrepreneurial activity as critical to economic development through the creative and innovation it unleashes in markets. The Schumpeterian model stresses that a creative disruption of balanced economic forces enables entrepreneurs to serve a redistributive function by allocating resources to sectors where they are best used and removing them from where they are least productive (Brizek, n.d.; Gemmell, Boland & Kolb, 2012; Jones, n.d.). The theory suggests that economies thrive through creating disequilibrium in market set-ups.

An important but often understated contribution of this theory to entrepreneurial research is its emphasis on the role of creativity and innovation. According to Schumpeter (1934) cited in Marinova and Borza (2011), entrepreneurs bring about innovations and subsequently disequilibrium through effecting new combinations, such as new goods, new production methods, new markets, new supply chain and re-organising business activity. In the entrepreneurship domain, creativity involves generating and implementing new ideas which are pertinent to new venture creation. The process of creativity does not begin or end with entrepreneurship. Instead, it predates and outlives the new venture (Fillis & Rentschler, 2010).

In economic systems which are increasingly technology driven and knowledge based, it is critical that scholarly attention narrows from general creativity to the more relevant technological creativity which is in tune with the contemporary macro-environment (UNCTAD, 2010; Krauss & Sternberg, 2013).

2.6.3 Schultz

Schultz, who is a relative latecomer in comparison to the earlier stated pioneer entrepreneurship scholars, reinforced the critical role of creativity in economies (Audretsch, 2006). Unlike Cantolinism, which explained economic growth in terms of the disruptive effects of creativity, Schultz emphasised that economies thrive because of the stabilising effect of creativity. This is illustrated by the scholar's definition of an entrepreneur as anyone who can '...perceive an economic disequilibrium, evaluate its attributes and if it is found to be worthwhile to act on, reallocate his resources' (Schultz 1975:843). Closely linked to this view, is Hebert and Link's (1989) explanation of entrepreneurship as a process through which economies are restored to balance through creativity and innovation. Proponents of Schultz's view, who include Israel Mayer Kirzner, emphasise creativity as a stabilising and not disruptive force in entrepreneurship.

Following the disparate ways through which the aforementioned entrepreneurship research forerunners approach the creativity-entrepreneurship subject, this study adopts a unifying dimension that recognises the complementary aspects of the

disruptive and stabilising effects of creativity on markets and economies. It acknowledges the value of creativity in so far as ‘...entrepreneurship drives the market process towards more effective and/or efficient use of resources (Davidsson, 2004:14), instead of engaging in polemics on the divergent mechanisms through which creativity may exert influence on economies.

2.7 APPROACHES TO ENTREPRENEURSHIP

As indicated earlier, the arena of entrepreneurship research is an amalgamation of disciplines borrowing from numerous fields that include economics, psychology, sociology, education and public policy, thus giving rise to diversity in perspectives on entrepreneurship. Kuratko (2014) categorises the various approaches to entrepreneurship, breaking them into two broad groups, which are the micro and macro views. These are interrogated in the following subsection.

2.7.1 Micro approach

The micro-approach takes an inside-out approach to entrepreneurship and concentrates more on how the individual shapes the outside world. The micro approach to entrepreneurship is sub-divided into the entrepreneurial trait, venture opportunity and strategy formulation schools of thought. These are individually dealt with in the ensuing discussion.

2.7.1.1 Entrepreneurial trait view point

The motivation of this approach to entrepreneurship research is to ascertain a stable set of personal characteristics that delineate real entrepreneurs (Kuratko, 2014). Following McClelland (1961), subscribers to this viewpoint believe that they are definite unchanging and unique facets that characterise entrepreneurs. Ardent followers of this school of thought subscribe to the view that entrepreneurs are born. The trait movement evolved through analysing the characteristics of successful entrepreneurs and making them stock indicators of what makes an entrepreneur. The common traits that have been identified as defining successful entrepreneurs include a high need for achievement, strong self-confidence, independent problem-solving

skills, moderate risk-taking, an internal locus of control, self-efficacy and behavioural control (Bygrave, 1989; Hmelski & Corbbet, 2006; Kumara & Sahasranam, 2009; Remeikiene, n.d.).

The trait-based approach to entrepreneurship has however been criticised for lacking consistent generalisability, inconsistency with reality and current social sciences theorisation (Rauch & Frese, 2000). As such, Liñán et al. (2011) note that the link between individual psychological traits and entrepreneurship needs further probing to determine specific aspects that wield significant influence on entrepreneurship activity. Some scholars observed that some presumed entrepreneurial features may not always be present in successful entrepreneurs (Cunningham & Lischeron, 1991). It is such denunciation of trait-based theories that has opened up a case for the argument that entrepreneurs can be made through formal and informal learning (Drucker, 1995). Practical evidence of the plausibility of this view is the increasing adoption of EE and training which now forms part of the armoury for defeating the “entrepreneurs are born” school of thinking.

2.7.1.2 Venture opportunity view point

Protagonists of this school of thought view entrepreneurship in line with the ability to identifying business opportunity and coming up with ideas to satisfy market needs (Cunningham & Lischeron, 1991). Like Shumpeter, Kizerner and Schultz, they believe in the significance of creativity and innovation in opening up and taking advantage of market gaps in order to meet set objectives. It can be posited, in tandem with this that, it is those who are better at opportunity recognition, business idea generation and implementation who usually succeed in the market (Krueger, 2003; Chea, 2008; Farsi et al., 2012). Scholars and global development bodies are convinced that EE and training play a key role in honing one’s creativity, ability to recognise and take advantage of business opportunities in the market (Wilson, 2009; Liñán et al., 2011; Fayolle, 2013; UNCTAD, 2014).

2.7.1.3 Strategy formulation view point

The guiding belief of the strategy formulation school of thought is that business ventures have a higher chance of success if they effectively plan their activities (Kuratko 2014). Therefore, entrepreneurs need to exercise due diligence when choosing their business ideas, markets to enter, products or services to provide and resources to commit to their ventures. Thompson, Strickland and Gamble (2008:23) made the following observation concerning strategic planning in business.

“High achieving enterprises are nearly always the product of astute, creative, proactive strategy making that sets a company apart from its rivals...”

2.7.2 Macro approach

This view dwells on the external forces that present challenges and opportunities to the entrepreneur. The premise is that individual entrepreneurs have an external locus of control, that is, the fortunes of entrepreneurs are dependent on changes beyond their control. The macro-approach can be sub-divided into the following distinct clusters:

2.7.2.1 Environmental viewpoint

This school of thought propagates that the development of individual entrepreneurs is an outcome of proximal environmental factors forces (Kuratko, 2014). These forces include family, friends, workmate, societal value systems, norms and institutional influences (Teixeira & Davey, 2010; Duval-Couetil, 2013). The contextual forces provide the base for identifying perceived entrepreneurial opportunities and hindrances, which may shape one’s motivation and intention to be an entrepreneur. In line with this perspective, many governments are rendering institutions and policy measures that seek to promote entrepreneurship in order to tap into these aforementioned environmental provisions and mitigate any negative consequences from the external environment. For example, the South African government has in place the Youth Development Fund and the Umsobomvu Fund as measures to support entrepreneurship.

2.7.2.2 Financial viewpoint

This body of thought gives a distinction to start-up capital as essential for the success of business ventures (Kuratko, 2014) The main argument is that enterprises with a broader capital base have a larger chance of success (Lougui & Nyström, 2014; Musabayana, n.d.; Radipere, 2012) than their counterparts. Therefore, the position of a business venture should be evaluated from a financial or capital perspective. However, critics of this perspective argue that capital is only one important factor among many, and therefore should not be considered as superior.

2.7.2.3 Displacement viewpoint

It is argued, from this perspective, that individuals participate in entrepreneurship after being dislodged from their comfort zones by some external force (Harrington, Kew, & Kew, 2010; Gemmell et al., 2012). Kuratko (2014) mentions individual displacement in the political, cultural and economic arena as the likely trigger events and/or stimuli towards entrepreneurial action. Our inference is that in the absence of this displacement, individuals will continue in circumstances of lethargy and not work on their entrepreneurial intent that flourishes entrepreneurial behaviour. In other words, entrepreneurial behaviour is some form of compensatory behaviour for having been deprived of or moved from an alternative activity. For instance, if a legal counsellor has been fired or suspended, they may start their own business as compensatory behavior. This line of thought resonates with Shapero and Sokol's (1982) Theory of Entrepreneurship Event, which stresses the importance of entrepreneurial triggers.

That said, both the macro and micro schools of thought are applicable to this study. At the macro level, it is a fact of life that business operations are subject to outside elements such as the state of the national or global economy, government regulations and labour laws. On the flipside, a combination of certain individual traits such as creativity and some external aspects that include educational interventions may potentially fine-tune the traits, thus enhancing students' actual and perceived capability to identify and act on entrepreneurial opportunities on the market. The preceding discussion informed the conception of the current study which related the

effects of both intrinsic and extrinsic factors on the entrepreneurship intentions of students from particular tertiary institutions in Zimbabwe and South Africa.

2.8 THE IMPORTANCE OF ENTREPRENEURSHIP

Several scholars contend that entrepreneurship leads to the creation of new business ventures, generation of new products and services, and the development of new markets and new business processes (Baumol, 2007; Gemmell et al., 2012; Sun, 2012; Kirby, 2013; Kuratko, 2014). Recent empirical studies on the effects of entrepreneurship on nations show that entrepreneurs' activities lead to substantial social and economic contributions in both developed and emerging economies (Urbano & Guerrero, 2013; Gyamfi, 2014; Smallbone et al., 2014). For instance, the United Nations Conference on Trade and Development (UNCTAD) Report (2014:2) indicates that '...in the last decade new firms generated between 1 and 6 per cent of employment in Organization for Economic Cooperation and Development (OECD) countries. [...] High-growth enterprises have played a particularly important role, as the 10 per cent most rapidly growing enterprises have created between 50 and 60 per cent of gross employment gains.' Such statistics explain why policy makers and scholars are enthusiastically embracing entrepreneurship making further calls to find ways that enhance entrepreneurial activity. The voices are even louder in developing countries where society's twin ills of poverty and unemployment thrive. The following citation from UNCTAD (2014:2) underscores the urgent need to find alternative means of generating new jobs.

Globally, there are 73.4 million young people – 12.6 per cent of the total youth population – who were jobless in 2013, with an increase of 3.5 million between 2007 and 2013 (2014:2).

The above-cited high unemployment rates underscore the need to promote entrepreneurship in distressed economies across the globe. The following subsection presents the significance of entrepreneurship to various world regions.

2.8.1 United States of America

The USA economy is characterised by a relatively high number of self-employed individuals and ‘...is home to a high percentage of individuals with professional, technological, or business degrees, a group that registers at the highest entrepreneurial activity rate’ (Kuratko, 2010:15). The US itself is home to a number of the most prominent entrepreneurs in the world such as Bill Gates (Microsoft), the late Steve Jobs (Apple), Andrew Carnegie, Henry Ford and Donald Trump just to name a few. According to the USA Small Business Administration (2016), about 56.8 million people were in the employ of US small businesses in the year 2013 and 220,000 new business ventures were formed in the first half of 2014. Within the same period of time, 805,000 new jobs were created by small entrepreneurial firms. These statistics demonstrate the vibrancy and some of the benefits of entrepreneurship within economies, as well as partly explain why the USA is amongst the world’s leading economic players. It is no wonder that *The Economist* periodical dubbed the USA as the ‘United States of Entrepreneurialism’ in 2009. The same publication reported that between 1996 and 2004, an average of 550,000 small businesses was launched every month in the US only. Hence, the entrepreneurial nature of the US society has set it in a position for a steady supply of jobs, cutting edge innovations, market competitiveness, high economic growth and high standards of living.

The US government and companies attach significance to entrepreneurship as noted in the amount of resources they committ to entrepreneurship development and non-governmental organisations. For instance, the Kauffman Foundation spends about \$90m annually in support of entrepreneurship development programme in the USA (The Economist, 2009). According to the Economist (2009), Goldman Sachs committed \$100m over five years from 2009 to 2013 to promote entrepreneurialism among women in the developing world, particularly through management education. Such levels of devotion explain why entrepreneurial activity is high in the US while most advanced economies are characterised by citizens who are not willing to become entrepreneurs by career choice (Singer et al., 2015).

2.8.2 Asia

According to Kuratko (2014), entrepreneurs have for a long time created a number of enterprises that have subsequently led to job creation, improved productivity, enhanced prosperity, and resulted in a higher quality of life in the Asian region. As with other regions across the world, Asian countries recognise the role of entrepreneurship as a justifiable way to enhance economic growth and job creation (Anderson & Warren, 2011; Arthur et al., 2012). According to Wan and Sebastian (2011), about 1.3 billion people across the globe are stuck in extreme poverty, with many of them living in Asia and the Pacific region. The fact that economic trends indicate a sway towards knowledge-based and technology driven industries has, however, resulted in a marked decline in traditional labour intensive economies, thus raising the spectre of high unemployment. Some Asian countries, including Thailand, Malaysia, Singapore and Indonesia, have progressively experienced high graduate unemployment (Sondari, 2014) as shown in Figure 2.1. As a result, entrepreneurship is presented as a potential solution to the problem.

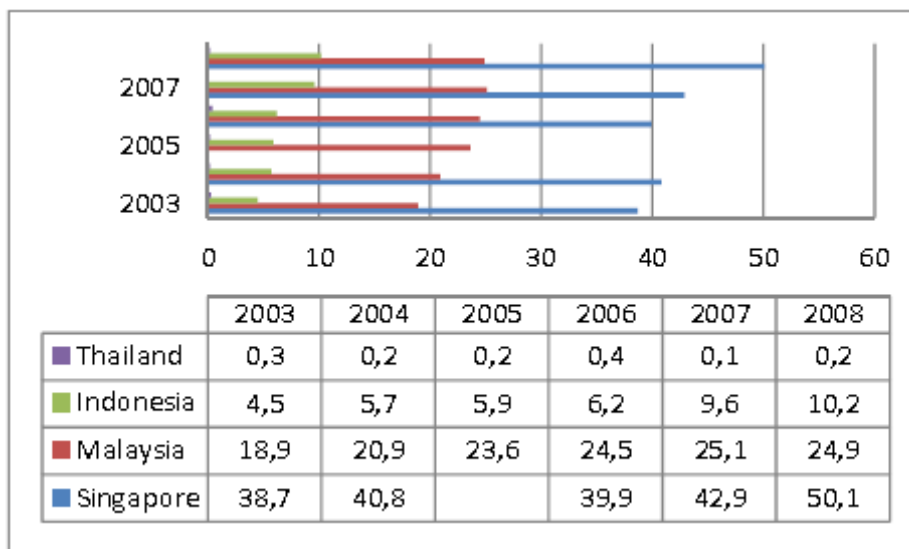


Figure 2.1 Graduate unemployment in Asia

Source: Sondari (2014)

Other countries, such as Bangladesh, which are characterised by poor industrialisation, marginal economic growth and high unemployment levels have taken

measures to enhance entrepreneurship as means to improve their people's standards of living (Tahlil & Muzahid, 2010). Thus, many households find means for survival through various entrepreneurial activities, particularly street vending. Koveos (2014:1) writes that "It offers hope even to those who find themselves born into extreme poverty, in the slums of Mumbai". In the Chinese context, the advent of a liberal economy and encouragement of the creation of private-owned business ventures was accompanied by a sharp rise in the country's annual gross domestic product, in the process uplifting millions of Chinese citizens from poverty (Ahlstrom & Ding, 2014, 2015).

The significance of entrepreneurship in the Asian community manifest resulted in the beneficial transfer of technology facilitated by Asian migrant entrepreneurs based in developed countries who maintain strong ties with their home countries (Ahlstrom & Ding, 2015). According to Wright, Liu, Buck and Filatotchev (2008), returnee immigrant Chinese entrepreneurs are usually highly qualified in the science and engineering fields and return home to establish firms in their area of specialisation. These returns therefore facilitate technology transfer and boost the innovation capacity of the home country and enhance the potential of the home country.

2.8.3 Africa

Africa stands to benefit immensely from entrepreneurship through improved gross domestic product, higher standards of living among nations' citizens, and infrastructural and community development. There is evidence suggesting that the increased mechanisation by large firms has enabled small businesses in Sub-Saharan African countries to assume the role of net job creators (Haltiwanger, Jarmin & Miranda 2012; Bridge & O'Neill, 2012; Edoho, 2015). Page and Soderbom (2015) posit that small firms currently contribute 47% of any new jobs created on the African continent (Page & Soderbom, 2015). The significance of entrepreneurship to Africa is also underscored in the reality that about 40% of adults aged between 18 and 34 are engaged in some form of entrepreneurial activity (Singer et al., 2015). However, it can be argued that entrepreneurship in Africa could add more socio-economic value if it is more opportunity than necessity driven (Adom, 2014; Margolis, 2014). The argument

is that necessity-driven-entrepreneurs engage in less innovative activities which are at times not sustainable.

2.8.4 South Africa

South Africa stands to benefit immensely from entrepreneurship. The existence of a high youth unemployment rate and 9.8-million of the working age group who are not economically active and a traditional job market that cannot generate enough jobs to meet market demand (Statistics South Africa, 2014), demands that the country's citizens engage in entrepreneurship as a potent alternative to rescue the country from a potential time bomb (Kelley et al., 2010; Nicolaides, 2011; Cloete & Ballard, 2012; Steenekamp, 2013). However, indications are that total entrepreneurial activity is very low in spite of the potential benefits of entrepreneurship that may accrue to the country's citizenry.

Patel (2014:1) suggests that entrepreneurship has the potential to "...create and bring to life new technologies, products and services and create new markets and jobs along the way". This view finds corroboration from the joint FNB Bank and Gordon Institute of Business Science Report (2014) on the state of entrepreneurship in South Africa, which claims that entrepreneurs drive markets by intensifying competition, which leads to new ventures and consequently job creation. The report also argues that entrepreneurship empowers citizens and is essential for participation in international trade and global trade. Finally, the fact that entrepreneurs are tax payers, customers and consumers of products and services from other firms, and instillers of confidence in the country's citizenry, also shows that they contribute directly to the national output, export performance and global competitiveness of South Africa.

The importance of entrepreneurship to South Africa has long been appreciated by the national government as evidenced by the inclusion of entrepreneurship in the Accelerated and Shared Growth Initiative of South Africa (ASGISA). The vision of the policy on its launch was for South Africa to develop into an entrepreneurial nation that rewards and recognises those who see a business opportunity and pursue it. In 2008, the country was estimated to have "...have approximately 2 million small businesses,

representing 98% of the total number of firms in the country...with small enterprises employing about 55% of the country's labour force and contributing approximately 42% to the country's wage bill" (Industrial Development Corporation, 2014:1). However, the process of embedding entrepreneurship in the country's society appears to be hamstrung by a number of factors that include poor entrepreneurial skills, inclination of citizenry towards corporate careers, difficult access to finance for the previously disadvantaged groups and low tolerance of entrepreneurial failure (Herrington et al., 2010).

The process of entrepreneurship is however not without its short comings. Firstly, the process of entrepreneurship puts one's reputation and self-confidence on line. A failed enterprise usually results in loss of status as the failure will be associated with the entrepreneur. This may potentially dent one's self-confidence and willingness to commit to future entrepreneurial endeavours, a factor stated by Nicolaides (2011) to be a contributor to low entrepreneurship intentions in South Africa. This is corroborated by Herrington and Kew's (2016) observation that the proportion of the SA adult population that fear failure as entrepreneurs rose from 27.2% in 2013 to 30.3% in 2015. This is worsened by the fact that of all the business exits that took place in SA in 2015, only 6% were voluntary and for positive reasons.

2.8.5 Zimbabwe

Evidence from the Zimbabwean and South African contexts suggests that TEA among graduates is low notwithstanding potential rewards from pursuing such a career that may accrue to the individual, local communities and the nation (Kelley et al., 2010; Mauchi et al., 2011; Naong 2011; Hosho et al., 2013). Entrepreneurship will thus keep citizens of a country productively occupied. Evidence to this effect can be found in the Zimbabwean context where the 2011 Report of Labour Force Survey demonstrates that of the 5.4 million economically active population in broad employment, over 84% of that fraction are self-employed (See Table 2.5).

Table 2.5 Employment status in Zimbabwe

Status in Employment	Male	Female	Total	
			Percent	Number
Paid employee- permanent	70.1	29.9	100	841 887
Paid employee- casual/temporary/contract/seasonal.	61.2	38.8	100	512 733
Employer	69.8	30.2	100	23 020
Own account worker (communal, resettlement & peri-urban farmer)	43.2	56.8	100	3 284 353
Own account worker (other)	48.3	51.7	100	714 873
Contributing family worker	34.6	65.4	100	48 865
Not Stated	52.8	47.2	100	5 295
Total	49.8	50.2	100	5 431 026

Source: Zimstat Labour Force Survey report (2011)

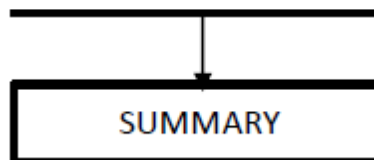
The statistics of individuals classified as own account worker show that the bulk of the economically active part of the Zimbabwean populace is engaged in the informal sector of the economy. As such, they constitute necessity-driven entrepreneurs and this can be attributed to the relative ease of entry into and exit from such economic activities. Thus, entrepreneurial activities in Zimbabwe provide a source of income and livelihood to the country's citizens.

Besides providing income and a source of livelihood, Tsikirai, Muchenje and Katsidzira (2013) affirm that entrepreneurship socially and economically empowers the disadvantaged groups of the population in the country. Given the large proportion of the total population that is currently self-employed, such activities contribute towards the eradication of poverty and income disparities in Zimbabwe. In addition, Zindiye, Chiliya and Masocha (2012) posit that small and medium entrepreneurs contribute 50% of Zimbabwe's gross domestic product, thus indicating the increasing importance that SMEs are assuming in the Zimbabwean economy. However, such smaller players' contributions would be more valuable to the country if they engaged in more innovative activities instead of the predominantly replicative and informal activities that they engage in. It is, therefore, the aim of this study to contribute towards the quest toward the development of potential entrepreneurs with the appropriate skill inventories to drive a modern economy.

2.9 SUMMARY

This chapter reviewed literature related to the entrepreneurship concept. It highlighted the complexities associated with defining the concept as well as the importance of the concept in different geographical contexts. The next chapter focuses on the entrepreneurship education concept.

CHAPTER 3: ENTREPRENEURSHIP EDUCATION



3.1 INTRODUCTION

The previous chapter focused on the entrepreneurship concept and highlighted its significance to society and nations at large. This chapter addresses the concept of entrepreneurship education. It unpacks the various dimensions of the construct including its definition, approaches, measures and application to various regional contexts.

3.2 BACKGROUND TO ENTREPRENEURSHIP EDUCATION

An unsettling development in the contemporary economic environment is the growing spectre of graduate unemployment in African countries, Zimbabwe and South Africa included (Naong, 2011; Owusu-Ansah & Poku, 2012; Mushipe, 2013). Youth and women form the most vulnerable sections of society (Nani, 2011; Okurut & Ama, 2013), thus underscoring the demand for measures to harness entrepreneurship as a mechanism for reducing or eradicating the high levels of unemployment. For instance, new venture creation, as part of entrepreneurship, enables individuals to create jobs for themselves and others. In the face of the prevailing high youth unemployment rates, it is advisable that the youth pursue entrepreneurship careers as an alternative to formal employment. However, it is important to note that one requires the relevant skills and mindset in order to be an effective entrepreneur.

The introduction of entrepreneurship education in tertiary education institutions is one of the policy intervention measures that are often adopted to promote entrepreneurship amongst the youths (Dejaeghere & Baxter, 2014). Entrepreneurship education is one of the rapidly growing fields of study and has gained widespread acceptance amongst both scholars and policy-makers as a solution to many social and economic problems and as a way for responding to market opportunities (Zakaria et al., 2011; Arthur et al., 2012; Zhou & Xu, 2012; Fayolle et al., 2013). The high popularity of the discipline in the developed world is illustrated by the North American case where there were 2 200 entrepreneurship related courses, 1 600 schools with entrepreneurial activities and 277 full tenure positions in 2006 (Pittaway & Edwards, 2012). Finkle, Kuratko and Goldsby (2006) posit that about 400 000 students enrol annually for entrepreneurship-related courses in the USA. In addition, Fredereck and

Kuratko (2014) underscore the growth of the entrepreneurship education field, in their observation that scholarly publications in entrepreneurship related fields have significantly expanded with a number of highly ranked academic conferences and refereed academic journals sprouting over the past years.

The growth trend extends to Western Europe and South Africa as well. Weber (2012) avers that in the decade running to 2005, the German government spent an estimated EURO 46 million on strengthening the structures of entrepreneurship education by supporting chairs and entrepreneurship centres at tertiary institutions. SA tertiary institutions have also jumped on the entrepreneurship education band-wagon. According to Malebana (2012), about 23 South African public universities offer entrepreneurship-related courses as part of under- and postgraduate degree programmes. This figure excludes private universities and other non-degree awarding institutions. Thus, this endorsement suggests the potential of entrepreneurship education to stimulate economic activity and improve the socio-economic well-being of communities through technology-driven and knowledge-based global economies. In actual fact, Sun (2012:160) posits that "... to enhance nations' innovative capability, institutions have to offer courses that can systematically enhance the innovative mind-sets, creative thinking capability and entrepreneurial spirit of a majority of students". However, substantial questions relating to the effectiveness entrepreneurship education and training remain unanswered and need further probing.

It has been argued that contemporary efforts to prepare, educate and train entrepreneurs for involvement in the innovation economy are inadequate (Sarri et al., 2010; Schmidt et al., 2012; Schmidt et al., 2013). Some scholars even suggest that most of the courses offered by training institutions in the developing countries, where innovation is most desired, emphasise skills and competencies related to traditional management as opposed to entrepreneurship (Antonites, 2003; Sawyer, 2006). The next subsection, therefore, considers the definition of the entrepreneurship education concept.

3.3 WHAT IS ENTREPRENEURSHIP EDUCATION?

The definition of entrepreneurship education in entrepreneurship research is contested (Kailer, 2007; Weber, 2012). Scholars have created different meanings which emphasise different aspects such as the stage of development of participants and programme objectives. The term is generally used in reference to the deliberate transmission of entrepreneurial knowledge (European Commission, 2012). Such entrepreneurship knowledge encompasses thoughts, expertise and mind-sets relevant to business venture creation and survival. For Fayolle, Gailly and Lassas-Clerc (2006), entrepreneurship education refers to any instructional programme and/or process that aim to instil entrepreneurial attitudes and skills. Thus, entrepreneurship education is not about building entrepreneurship competencies only but also seeks to entrench associated frames-of-mind, such as self-confidence, tolerance of ambiguity and dissatisfaction with current status. Similarly, Politis (2005) portrays entrepreneurship education as a continuous process that facilitates the development of necessary knowledge an effective starting up and management of new ventures. However, this definition of entrepreneurship education is rather restrictive given that entrepreneurship goes beyond new venture creation and management. Therefore, unlike the earlier characterisation, the above definition highlights the on-going nature of entrepreneurship education in line with different phases in the entrepreneurship career path.

Garavan and O’Cinneide (1994) identify three broad categories that are subsumed under the term entrepreneurship education, which are: *education about enterprise* (involving the transfer of knowledge to awaken students to the various fields and intricacies of entrepreneurship), *education for enterprise* (encompassing the dissemination of transferrable skills that are required for one to start and manage a business venture) and *education in enterprise* (involving the transfer of entrepreneurial knowledge and skills to already practising entrepreneurs in order to enhance their dynamism and to promote distinct specialisation in a particular field). Elsewhere, Linan (2004) proposes entrepreneurship education as falling into four categories: *entrepreneurship awareness education*, *education for start-up*, *education for*

entrepreneurial dynamism, and continuing education for entrepreneurship. This is further explained in Section 3.4.

While a variety of definitions of the term entrepreneurship education have been suggested, this study was guided by Linan's (2004) explanation which regards the task of entrepreneurship education as the transfer of entrepreneurship knowledge and skills, and the development of students' cognate attitudes and personality characteristics.

3.4 OBJECTIVES OF ENTREPRENEURSHIP EDUCATION

The target audiences and content of entrepreneurial education are wide and varied, thus making the objectives of entrepreneurial education also diverse. Alberti et al. (2004) list the following as some of the objectives of entrepreneurship education.

- Imparting knowledge unique to entrepreneurship.
- Give skills and competencies relevant to everyday business situations.
- Awaken the entrepreneurial drive, spirit and intention to highlight the possible rewards that may emanate from an entrepreneurship career.
- Toning down the overly risk emphasis of business analysis techniques.
- To get stakeholder buy-in into entrepreneurship.
- Enhance new venture creation and promote positive attitude towards change.

However, Fayolle and Gailly (2008) alternatively suggests that entrepreneurship education programme objectives can be categorised as pedagogical, social, and/or economic. According to the authors, pedagogical goals of entrepreneurship education help increase entrepreneurial awareness in the early stages of the entrepreneurship education process. Thus, formal educational settings make use of these types of goals for the didactic process. In addition to the above, the economic goals of entrepreneurship education seek to address socio-economic challenges besetting national governments and facilitate the attainment of national goals. The goals for entrepreneurship education are usually set in the form of a number of new business start-ups established by graduates of entrepreneurship education programmes over a

particular time period and the number of jobs created by such graduates among (European Commission, 2012). This type of objective is suitable for the people being trained for and within entrepreneurship.

Linan (2004) adopts a different approach to the categorisation of entrepreneurship education objectives. He stresses the dynamic nature of objectives which characteristically change as an individual stage of development progress and skill requirements change. The author thus suggests four objectives for entrepreneurship education based on the target audience. These categories are addressed in detail below.

Awareness- The basic goal of entrepreneurship education is to create awareness of entrepreneurship and its viability as a possible career choice. This objective tallies with those of students undergoing education about entrepreneurship and is typical of most lower and higher education institutions. Usually, attainment of this objective is assessed by way of formal examination systems.

Number of start-ups- The objective of such entrepreneurship education programmes is to increase the supply of entrepreneurs. This objective resonates with those students going through education for entrepreneurship. The effectiveness of such programmes is evaluated by means of new ventures created or the number of jobs generated by people who would have undergone the training programme.

Reskilling/ Continuous skill improvement- The object of such training and education programmes is to enhance the skills of already practicing entrepreneurs. This type of goal is usually set for people who are undergoing entrepreneurship education but are already practicing entrepreneurs. Generally, assessing the effectiveness of such objectives is complex but one may argue that improved business performance is one of the key indicators.

Improving entrepreneurship dynamism- This is the most elusive and complex of objectives of entrepreneurship education. This objective is again set when educating

already existing entrepreneurs who want to position themselves for growth through innovation. Setting up such an objective is so challenging such that even leading scholars in entrepreneurship education are not sure about how to achieve such goals and thus the attainment of such a target may continue to be a mirage. However, the objective has the advantage of continuing to stretch the imagination of practising entrepreneurs for the benefit of society.

While different authors suggest different categories of entrepreneurship objectives, one cannot help noticing more commonalities than differences in the groupings. Perhaps what should be of concern to entrepreneurship education are the challenges of meeting these objectives rather than focusing on the differences. This justifies the need for an on-going and robust research on various facets of entrepreneurship education.

3. 5 TEACHING ENTREPRENEURSHIP

Although it is generally accepted that entrepreneurship can be encouraged amongst the youth through entrepreneurship education (Drucker, 1995; Henry, Hill & Leitch, 2005; Balan & Metcalfe, 2012), there are still contestations on the optimum way to achieve this (Pittaway & Cope, 2007; Liñán et al., 2011; Pittaway & Edwards, 2012). Whereas the question of whether entrepreneurship can be taught or not has been asked over the past half century and at times does crop up during academic and public debates, it seems the question of the moment is how entrepreneurship can be best taught (Cruz, Escudero, Barahona & Leitao, 2009; Karimi & Mulder, 2010; Martínez et al., 2010).

Although numerous higher education institutions worldwide offer courses in entrepreneurship education in the hope that training and educating more individuals on aspects of the entrepreneurship process will increase the number of potential entrepreneurs (Kuratko, 2005; Weber, 2012; Volery et al., 2013; Fayolle, 2013), there exists one stumbling block to this quest in the form of an absence of an agreed best practice template for teaching and learning entrepreneurship (Albornoz, 2011; Maritz & Brown, 2013; Maritz et al., 2014). However, there are suggestions that the best way

to teach entrepreneurship depends on the context (Piperopoulos & Dimov, 2014; Mwasalwiba, 2012). For instance, the manner that one imparts entrepreneurial knowledge hinges on whether it is within or outside a formal educational context; or whether we seek to impart entrepreneurial knowledge, breeding enterprising individuals, train entrepreneurs or to groom entrepreneurship academics (Liñán et al., 2011; Fretschner & Weber, 2013). The unfolding discussion reveals a tight interlink between teaching method, target audience and objectives. This perspective gels with Fayolle and Gailly (2006) and Maritz and Brown's (2013) attempted entrepreneurship education programme frameworks which highlight various interconnections amongst different facets of entrepreneurship education.

The classification of entrepreneurship education approaches has generally been approached from different perspectives. For instance, some scholars generally draw distinctions between traditional and non-traditional methods of teaching entrepreneurship (Co & Mitchell, 2006; Mars & Garrison, 2009). Furthermore, entrepreneurship scholars classify teaching methods from another standpoint on the basis of the student's learning approach. Thus, passive and active methods of entrepreneurship education are identified (Kirby, 2013).

3.5.1 Traditional methods

Entrepreneurship education literature identifies the traditional teaching methods as lectures, seminars, workshops, and case-studies (Mwasalwiba, 2012). These methods are significant pedagogical approaches that promote the transfer of knowledge and stimulate awareness on entrepreneurship (Balan & Metcalfe, 2012). Therefore, it can be inferred that traditional teaching methods probably work best when the intention of the educator is to disseminate entrepreneurial knowledge and create awareness about entrepreneurship. This is the most common method of entrepreneurship education in formal schooling settings up to tertiary level (Weber, 2012). This view is corroborated by Mauchi et al. (2011) who observe that the most applied entrepreneurship education methods at Zimbabwean universities are the passive and teacher-centred traditional methods. The reason for their widespread use relates to their relative low cost and convenience (Mauchi et al., 2011). From both a

functional and resource perspective, it is logical to strike a balance between the benefits of cost minimisation and those of choice of effective methods in order to prevent entrepreneurship education from becoming a futile exercise.

Although the traditional pedagogical techniques have significant strengths, they also have some major weaknesses with regard to the grooming of future entrepreneurs (Baumol, 2005; Griffiths et al., 2012; Mayhew et al., 2012). Traditional teaching methods have in-built limitations when it comes to teaching the creative and practical aspects of the entrepreneurship process (Penaluna, Coates & Penaluna, 2010; Sun, 2012; Schmidt et al., 2013). However, some of the less passive traditional techniques, such as the use of guest entrepreneurs, can enrich the entrepreneurship training process by affording participants an opportunity to engage with practicing entrepreneurs who have experienced the opportunities, trial and tribulations of an entrepreneurial career (Muofhe & Du Toit, 2011; Bosma, Hessels, Schutjens, Praag & Verheul, 2012; Karimi, Biemans, Lans & Chizari, 2013). Students are thus afforded the opportunity to probe the entrepreneurial process and get instant feedback on the practical aspects of entrepreneurship.

3.5.2 Non-traditional methods

There is an upsurge of the use of innovative and technology-driven methods because of the numerous shortcomings of traditional methods of entrepreneurship education and training (Klapper & Tegtmeier, 2010; Penaluna et al., 2010). One may argue that the non-traditional methods, known for their relative flexibility and openness to explorative and divergent thinking, may be appropriate for programmes that seek to encourage both technology creativity and innovative entrepreneurship (Baumol, 2005; Baldacchino, 2009). However, such methods, effective as they may be, are relatively costly and complex and would be a burden to less resourced institutions of higher learning (Bennett, Foreman-Peck, Higgins & Higgins 2014).

Contemporary scholars in entrepreneurship education generally advocate for experiential learning (Albornoz & Rocco 2013; Cavicchi, Rinaldi & Santini 2015). This type of learning encompasses learning by doing. Here, learners assume a more active

role, with the lecturer assuming a facilitator's role. Such non-traditional methods of learning include computer games, role playing, business simulations and participation in business competitions. Students draw on these techniques to experience the unpredictable aspect of business, and note the various possibilities of risk and success before they actually engage in real business (Lefebvre & Redien-Collot, 2013; Fayolle, 2013; Karia, Bathula & Abbott, 2014; Kassean, Vanevenhoven, Liguori & Winkel, 2015). Therefore, students will develop various problem solving skills associated with the entrepreneurship process, itself a turbulent and rarely predictable engagement. Proponents of this school of thought discard traditional methods and promote innovative methods of teaching as a basis for grooming creative and value adding entrepreneurs who are relevant for the contemporary knowledge-based economies (Griffiths et al., 2012).

However, literature suggests that universities are generally mixing traditional and non-traditional teaching methods in their entrepreneurial curricula. The general argument is that such integrated approaches are synergistic and will lead to better student appreciation of and better perceptions of entrepreneurship (Arthur, Hisrich & Crabrerria, 2012; Piperopolous & Dimov, 2014), a condition which is currently lacking amongst South African (Naong, 2011) and Zimbabwean university graduates (Mauchi et al., 2011; Hosho et al., 2013). Fayolle and Gailly (2008) however, call for general caution when choosing the best method for educating and training entrepreneurs. These scholars argue that research on the assessment of entrepreneurship education is still scant to point out an absolute best-practice teaching model in entrepreneurship education. Therefore, the choice of teaching model must be more informed by pragmatism, and consider the institution's resource endowment and constraints (Blenker, Korsgaard, Neergaard & Thrane, 2011; Huxtable-Thomas, Hannon & Thomas, 2015).

3.6 ASSESSING ENTREPRENEURSHIP EDUCATION

Fayolle and Gailly (2008) express concern on the low level of research activity relating to the issue of evaluating the effectiveness of entrepreneurship education programmes. Yet the number of institutions incorporating entrepreneurship in their

curricula and the quantity of resources being committed to the cause are substantial (Duval-Couetil, 2013; O' Connor, 2013; Naia, Baptista, Januário & Trigo, 2014). Educational science academics suggest that it is a rule of thumb that evaluation criteria be put in place as soon as a teaching programme has been designed (Cropely & Dave, 2014; Sallis, 2014; Savery, 2015). Ironically, entrepreneurship scholars and policy makers have been lethargic on this aspect in spite of the large resource commitments being made.

Literature, however, shows that scholars have long called for an effective assessment of entrepreneurship education (Solesvik et al., 2013; Bae et al., 2014). However, there exists disagreement on the best criteria for evaluating entrepreneurship education programmes and how to effectively measure them. Given an array of objectives that are often suggested for entrepreneurship education, it becomes difficult to come up with convenient and standard criteria for assessing entrepreneurship education. It is, therefore, crucial to note that assessment in the educational context dwells on a number of aspects and takes three main forms i.e. institutional, teacher and student assessment (Banta, 2002; Pittaway & Edwards, 2012). In this study, however, assessment focussed on the student as the most important subject in the whole entrepreneurship education process.

Numerous student-focused methods have been put forward as means for assessing the effectiveness of entrepreneurship education (Fayolle et al., 2006; Taatila, 2010; Duval-Couetil, 2013; Maritz & Brown, 2013). Some suggest that the contribution of entrepreneurship education should be measured along the number of new firms created by graduates (European Commission, 2012). This perhaps points to the special role allocated to university graduates in the entrepreneurship promotion process and suggest a shift from the dissemination of entrepreneurial skills to their application in context. Empirical studies suggest that university graduates usually establish firms which are more likely to survive when compared to non-graduates (Arasti et al., 2012; Solesvik et al., 2013) due to their wealth of entrepreneurship knowledge and higher financial resource base compared to non-graduates. At the same time, it is suggested in literature that university graduates are more likely to

commit more resources to the entrepreneurship process than non-graduates (Weber, 2012).

However, a major irony in the approach to entrepreneurship education evaluation is that it equates entrepreneurship with new venture creation, yet the entrepreneurship process may encompass other activities separate from new business start-ups (Frederick & Kuratko, 2012). Another observation is that this approach is more suited for graduates from 'entrepreneurship education for entrepreneurship' programmes as compared to those from 'education about entrepreneurship' programmes that focus on raising awareness only, which are most common in tertiary institutions across the globe, Zimbabwe and South Africa included.

Another student-focused approach to evaluating the impact of entrepreneurship education programmes is through the use of summative and formative assessments (Fayolle & Gailly, 2006; European Commission, 2012). These are more effective when testing knowledge among participants of an entrepreneurship education programme. They assist institutions with decisions on whether they should certify participants or not and are suitable for evaluating programmes delivered within tight time-frames but would not be suitable for the lifelong nature of entrepreneurship education (Maritz & Brown, 2013). Although its fundamental strength lays in the instant and standardised evaluation and feedback, the main challenge of of this assessment is that it does not look beyond the assessment period. A common category of impact indicators is the use of psychological constructs such as change in student attitudes, perceptions, interest, self-efficacy, confidence, abilities and skills towards entrepreneurship (Mwasalwiba, 2012). This approach is more suited for students emerging from an "education programme about and for entrepreneurship" in that it gives instant feedback on the influence of the programme on student psychological dispositions. It is also useful for circumstances where the real tangible results delay to manifest because of the time lapse between entrepreneurship education course and engaging in actual entrepreneurship behaviour like creating a new business entity. This is the approach that is adopted in this study given that students are the subject of the study.

3.7 STUDIES ON ENTREPRENEURSHIP EDUCATION

Entrepreneurship education in different regions across the globe demonstrates different levels of development and effectiveness. The next subsection examines this subject while emphasising the impact of entrepreneurship education on entrepreneurship intention of students.

3.7.1 Developed world context

3.7.1.1 USA

Entrepreneurship education has long been established in the USA with a pedigree traceable to the 1940s when the first class on entrepreneurship was established by Professor Myles Mace at Harvard University (Arasti et al., 2012). Over the years, entrepreneurship education has managed to evolve from a mere area of application of other study areas to a fully-fledged academic field (Morris, Kuratko & Cornwall 2013). From a few institutions of higher learning offering entrepreneurship education in the 1970s, entrepreneurship education has burgeoned to more than 2 200 courses at over 1 600 schools in the USA (Katz, 2003; Urbano et al., 2008; Albornoz, 2011). The US institutions offer courses of various levels and duration of study to cater for individuals at different stages of entrepreneurship development. According to Bygrave (2004), slightly above 60% of higher education institutions in the USA offer at least an entrepreneurship education programme. These courses equip participants with different attitudes, skills and competences relevant to the entrepreneurship field. Apart from that, the USA hosts a number of leading scholastic entrepreneurship journals including *Entrepreneurship Theory and Practice*, *Journal of Business Venturing*, *Strategic Entrepreneurship Journal*, *Small Business Economics* and the *Journal of Small Business Management*, pointing towards the extent of growth in entrepreneurship education over the years. Compared to other regional contexts, US colleges arguably offer more advanced and experiential learning and student-centred learning experiences than any other regional context (Dickson et al., 2008; Engle et al., 2010; Nafukho & Muhia, 2010; Lacobucci & Micozzi, 2012; Tiago et al., 2015).

3.7.1.2 European Union

Entrepreneurship education is widespread across the EU, with many countries having put in place policy measures and institutions to promote the development of entrepreneurship. However, the history of the discipline is shorter as compared other areas of study (Klandt & Volkmann, 2006). In spite of the shortcoming, the EU bloc has shown serious intentions to entrench entrepreneurship education throughout its member states as seen through the promulgation of the National Strategies, Curricula and Learning Outcomes for entrepreneurship learning at European schools (European Commission, 2012). It outlined the learning outcomes of its entrepreneurship education programme in an effort to to equip students with the necessary knowledge, skills and attitudes (Kozlinska, 2012). The past decade has seen a number of conferences meant to improve entrepreneurship education at European schools taking place, the pioneer one being the Oslo 2006 conference on 'Entrepreneurship Education in Europe' themed 'Fostering Entrepreneurial Mindsets through Education and Learning'.

Taking cue from the European Commission, a number of Northern Europe countries in the EU have instituted active steps in designing and implementing national initiatives meant to enrich entrepreneurship education and training from primary school level to tertiary education (European Commission, 2012; Jones & Iredale, 2014). Examples of such countries include Norway, Sweden, Estonia, Denmark, Lithuania and Belgium. Some countries do not have specific national entrepreneurship education, but encompass the entrepreneurship education in the wider lifelong education strategies. Such countries include Bulgaria, Greece, Finland, Liechtenstein, Spain and Slovenia (Urbano & Guerrero, 2013; Wach, 2014). Notably, most of the initiatives by individual countries emphasize active and participatory teaching methods, the practical and project-based approach, include learning settings outside the school, a hands-on approach and the use of teaching material designed in collaboration with other players (Wilson, 2008).

The Carnegie UK survey of 1 600 further education students (Metcalf, 2012) compared Welsh and English students to consider if the Welsh Government strategy

of embedding enterprise and entrepreneurship education in the college and school curriculum had enabled young people to demonstrate more positive attitudes towards entrepreneurship. The study found that, compared to other home nations, Welsh students were more positive about a future career in enterprise or self-employment, while students in England scored the lowest of all the home nations.

An experimental impact study, by Dunchev (2012), of a stand-alone entrepreneurship course based on Masters level students from a business school at a University in Denmark, evaluated students for their creativity levels before and after exposure to entrepreneurship education. The study findings suggested that there was sufficient evidence of a positive correlation between exposure to the programme and desired programme outcomes.

In another case, Aourni (2011) used a pre and post intervention questionnaire to test the impact of entrepreneurship education exposure through workshops and conference based presentations from successful entrepreneurs on entrepreneurship intentions. The study was conducted on young people in Belgium and incorporated a control group. Those participants that initially had a low interest in entrepreneurship experienced a favourable change on their entrepreneurial ambitions but this had no effect on their perception of the possibility of their ability to create new ventures. In addition, the participants who started off with a high interest in entrepreneurship experienced negative changes in their ambitions to become entrepreneurs and reflected no impact on the perceptions of the feasibility of starting a new business. This, therefore, questions the effectiveness of short-duration methods of entrepreneurship education.

Focusing on a one-day enterprise education course for engineering students at a French University, Fayolle et al. (2006), used a pre-course and post-course questionnaire to assess the impact of entrepreneurship education on the entrepreneurship intentions of the participants. Findings from the study reveal interesting, as it emerged that exposure to the one-day course had a solid impact on the entrepreneurial intention of students. Though positive, the results did not show a

very significant impact on their perceived behavioural control. Apart from the above, participants emerged from the study with higher confidence in their ability to be entrepreneurs in the near future. Finally, the study also noted the existence of enhanced anxieties as a result of the risks involved in setting up a business.

3.7.2 Developing world context

3.7.2.1 Asia

A number of Asian countries, including Malaysia, Singapore, Japan, Taiwan and China, have put in place measures to entrench entrepreneurship education in their younger generation (Tan & Ng, 2006; Chen & Yang, 2009; Ismail & Ahmad, 2013; Li et al., 2015). Malaysia has a two-tier higher education system characterised by Polytechnics that offer non-degree programmes and Universities focusing mainly on degree programmes, both of which have adopted entrepreneurship education (Ismail & Ahmad, 2013). The need for entrepreneurship education has risen to prominence owing to the current levels of youth unemployment and the quantity of annual school leavers in the country. According to Ahmad (2013) and Zakaria et al. (2011) a large number of graduates leave formal schooling every year to join a labour market which cannot adequately cater for the demand for jobs. As such, entrepreneurship is seen as a potential cure for unemployment. All public universities in Malaysia, in conjunction with the Ministry of Entrepreneurship and Corporate Development, have made entrepreneurship a compulsory subject for students in order to generate 5% entrepreneurs from every graduating stream (Harian, 2006). Polytechnics in that country have also integrated entrepreneurship education in their curricula, with three entrepreneurship programmes namely R2001, P3117, and P3130 being offered. The content of the subjects is shown in Table 3.1.

Table 3.1 Malaysian polytechnics entrepreneurship education syllabus

Module	Content
R2001	Entrepreneurship history, entrepreneurship concept and definition, entrepreneurs and business people, and entrepreneurship as a career option
P3117	Introduction to entrepreneurship, entrepreneurial issues, inculcating entrepreneurial culture, generation of entrepreneurial idea and opportunities, basic management, basic marketing, financial management, business proprietary establishment and procedures and business plan
P3130	Introduction to entrepreneurship, entrepreneurial issues, inculcating entrepreneurial culture, generation of entrepreneurial idea and opportunities, basic management, basic marketing, financial management, business proprietary establishment and procedures and business plan

Source: Ismail and Ahmad (2013)

However, there are misgivings on the effectiveness of entrepreneurship education in Malaysia as it stands. Criticism has been laid on poor teaching methods, with teacher-centred methods being used and no experiential learning methods adopted. Arguably, such methods are only effective in instances where the objective is only to create awareness about entrepreneurship.

Another Asian country that has actively adopted entrepreneurship education is China. The country has had the fastest growing economy in the world, in the past few years, as a result of entrepreneurship education, which can be traced to the mid-1990s when the Student Entrepreneurship Competition was first launched at Tsinghua University (Zhou & Xu, 2012). Over the years, the entrepreneurship education thrust has gained currency with the Ministry of Education taking an active role in the effort. In 2002, the Ministry of Education chose nine Chinese Universities to participate in the National Entrepreneurship Education Pilot Program (NEEPP) so as to explore the efficacy of different entrepreneurship education models.

A number of programmes seeking to improve entrepreneurship education have been initiated in China over the past few years. In 2005, the Know about Business (KAB) program, a collaboration program between academia, government and non-governmental organisations, was introduced at six leading Chinese universities comprising Tsinghua University, Beijing University of Aeronautics and Astronautics, China Youth University for Political Sciences, Heilongjiang University, Tianjin

Polytechnic University, and Beijing Youth Political College. A major recent milestone in the promotion of entrepreneurship education in China is the 2008 joint call by the Ministry of Education and the Ministry of Science and Technology to initiate pilot programs for innovation and entrepreneurship, such as Entrepreneurship Park and Science Park at selected universities (Wei, 2013; Tang, Chen, Li & Lu, 2014). These policy measures have resulted in an increased rate of business start-ups by college graduates and that of the vibrancy of the Chinese economy (Ahlstrom & Ding, 2015). In addition, the Global Entrepreneurship Monitor (2016) states that China's Total early-stage Entrepreneurial Activity (TEA) improved from 12.3% in 2001 to 24% in 2011. This raised China's TEA ranking among Asian countries from 11th to second position. These statistics are significant in that they show that a typical entrepreneur engages in opportunity-driven entrepreneurship, has a high school level of education and could possibly have been exposed to entrepreneurship education. This arguably substantiates the success of entrepreneurship education in the Chinese economy.

3.7.2.2 Africa

A number of studies evaluating the impact of entrepreneurship education on entrepreneurship intentions of students have been undertaken in the sub-Saharan context (Gerba, 2012; Owusu-Ansar & Poku, 2012; Mwasalwiba, 2013). However, much of the research has been skewed in favour of South Africa with the rest of the continent under-explored. Hence, in an effort to achieve inclusivity, this review incorporates studies from the rest of the African continent.

Gerba's (2012) study examined 156 Ethiopian undergraduate students from business and engineering courses who had completed a course in entrepreneurship in an attempt to understand their entrepreneurial intentions. The students were surveyed using self-completion questionnaires, which sought to gather information relating to the participants' personal attraction towards entrepreneurship, subjective norms, self-efficacy, entrepreneurial intentions, need for achievement, locus of control and instrumental readiness. The findings suggest that students who underwent entrepreneurship education had higher levels of entrepreneurial intentions compared to those who did not. It was also observed that male respondents scored higher on

indicators of entrepreneurship intentions than females. The study revealed no significant differences in the level of entrepreneurship intention between those with prior entrepreneurship exposure through family businesses and those who did not. The study strongly recommended the incorporation of entrepreneurship in university curricula. However, the study had limitations with regard to the sample size and study units from which respondents were selected.

Owusu-Ansar and Poku (2012) studied the impact of entrepreneurship education on the students' career intentions and aspirations and their attitudes towards business start-ups in Ghana. 352 students from the KNUST School of Business in Ghana were surveyed using self-completion questionnaires that were based on Likert scaled statements. The students were surveyed before and after exposure to entrepreneurship education in order to assess the effect of entrepreneurship education. The findings suggest that entrepreneurship education influenced the entrepreneurial awareness and career intentions of students who participated in the study. Apart from that, it emerged that the programme persuaded participants towards self-employment. Finally, the study recommended the setting up of institutional support structures in an attempt to encourage entrepreneurship and self-employment careers.

South Africa -A review of literature suggests that entrepreneurship education and training seems to have gained more acceptance and support in SA than in any other country in Sub-Saharan Africa with entrepreneurship education being offered from high school to university level, albeit hobbled by many challenges (Ndedi, 2013). Even though the curriculum was only implemented in 2006, SA had developed an entrepreneurship education strategy for Grade 10, 11 and 12 level students in 1994 as part of a project seeking to encourage entrepreneurship (Isaacs et al., 2007). In addition to this, Further Education Training (FET) colleges, which are widespread in the country, also offer entrepreneurship education. However, teacher's colleges are the only noticeable tertiary education institution that has not taken up the clarion call. According to Malebana (2012), at least some form of entrepreneurship education is offered at 23 public universities at both undergraduate and postgraduate levels, mostly

as part of business courses of study. The approach to entrepreneurship education generally utilises a range of teaching and learning methods, from active to passive ones, all seeking to equip participants with different germane attitudes, skills and competences (Co & Mitchell, 2006). Nonetheless, the incessantly rising incidences of youth unemployment and the accompanying reluctance of the same youth to engage in entrepreneurship raises questions about the effectiveness of entrepreneurship education in SA across the board. Though some factors may be put forward to explain such negative attitudes, anecdotal evidence suggests that the SA education system does not place as much emphasis on entrepreneurship as it does on other academic subjects like Mathematics and Science.

Davey, Plewa and Struwig (2011) undertook a comparative study of European and African university students' intentions and attitudes towards entrepreneurship, and the impact of exposure to role models and entrepreneurship experiences on such factors. A quantitative research design was used and a questionnaire was distributed to first year business students from Uganda, Kenya and South Africa (representing Africa); Finland, Germany, Ireland and Portugal (representing Europe). The study revealed that students from developing countries were more inclined towards entrepreneurial careers and showed more positive attitudes towards entrepreneurship when compared to those from developed economies, even though motivation existed in both contexts. The major shortcoming of this study's context was its use of a convenience sample and a very limited use of statistical analysis techniques. However, the study laid down a good foundation for further research on graduate entrepreneurship in both developed and developing countries.

Burger, O'Neill and Mahadea (2005) undertook a survey of Grade 12 students in the Stellenbosch region (South Africa) to evaluate the impact of experience and knowledge of entrepreneurship on current attitudes towards entrepreneurship. Based on the views of a sample of 370 students, the study revealed that two thirds of the respondents showed their willingness to start a business venture in the future. Despite the positive attitudes, only 34 of the total sample professed knowledge of the definite

steps required in the business venture creation process, thus revealing shortcomings in their exposure to entrepreneurship through entrepreneurship education.

Steenkamp, Van der Merwe and Athayde (2011) examined the state of entrepreneurship education in selected South African secondary schools to ascertain the influence of the students' attitude towards entrepreneurship on their future plans. A total of 1 748 pupils were surveyed. The outcome of the study showed that the students had a positive attitude towards entrepreneurship and entrepreneurship opportunities for new venture creation but had less interest in actually starting up their own business ventures. The findings revealed a fragmented and shallow form of entrepreneurship education. The study also revealed that family level exposure to entrepreneurship and entrepreneurship education exposure at school level did not have any significant impact on participating learners' entrepreneurship intentions, thus calling for a more focused entrepreneurship education and training programmes.

None of the findings, from the above studies, suggest that the duration of entrepreneurship courses had any effects on the participants' willingness to engage in entrepreneurship. There also seems to be no evidence that infer a difference in impact of stand-alone entrepreneurship courses as compared to those that are embedded in other courses. While the above-cited studies offer interesting insights on the possible entrepreneurship education and entrepreneurship intentions relationship, "it is not at all clear from the literature whether people, on average, experience any gain from training in terms of their awareness of or attitudes toward entrepreneurship, entrepreneurial intentions or entrepreneurial activity" (Martínez et al., 2010:15).

Zimbabwe -Meanwhile, Mushipe (2013) posits that entrepreneurship education in Zimbabwe began as early as the 1990s at the University of Zimbabwe, where an entrepreneurship development course, sponsored by Coca-Cola International and Barclays Bank Zimbabwe, was offered. This followed the sudden need for entrepreneurship skills arising from the introduction of the Economic Structural Adjustment Programme (ESAP) and its accompanying job cuts and retrenchments.

As such, economically active people had no choice but to create jobs for themselves and this needed entrepreneurship skills.

Over the years, the Zimbabwean government has taken deliberate measures to facilitate the teaching of entrepreneurship at local tertiary education institutions. As an illustration, a 2001 Joint Report produced by the Government of Zimbabwe-Unesco that reviewed developments in the education sector highlighted the need to infuse entrepreneurship in the curricula of local education systems (Government of Zimbabwe, 2001). In addition, evidence of such a thrust can be seen on the 2010-2015 Strategic Plan of the then Ministry of Higher Education and Technology which outlined the offering of entrepreneurship-oriented technical and vocational education as part of its objectives (Ministry of Higher Education and Technology, 2010). As such, the ministry has decreed that all students enrolled for a national certificate level of the Higher Education Examination Council (HEXCO) must compulsorily take a subject in Entrepreneurship skills development in order to graduate.

Zimbabwean universities and other vocational training institutions have also heeded the call for entrepreneurship education and are increasingly offering entrepreneurship training programmes. Some of those programmes are voluntary while others are compulsory. However, all the programmes have the broad goal of grooming self-employed job creators. The extent of entrepreneurship education at tertiary institutions in Zimbabwe can be illustrated in Table 3.2.

It is however not clear whether the institutions are succeeding in this endeavour. Hosho, Muguti and Muzividzi (2013) note that some university students who had undergone entrepreneurship education expressed notable dissatisfaction with the course materials and teaching methods they were exposed to during their studies. In a survey of the state of entrepreneurship education at Zimbabwean universities, Mauchi et al. (2011) noted that entrepreneurship education was still at its fledgling stage and had vast teething problems. They also observed that entrepreneurship was being taught and evaluated using traditional teacher-centred approaches and that the teachers had neither backgrounds nor specific qualifications in entrepreneurship.

Table 3.2 Entrepreneurship education in Zimbabwean tertiary institutions

Tertiary Institution	EE offering
Lupane State University	B Com (Hons) degree in Entrepreneurship
Chinhoyi University of Technology	B Com (Hons) degree in entrepreneurship and management
Women's University in Africa	B Com (Hons) degree in entrepreneurship and management
Bindura University of Science and Technology	Module in Entrepreneurship as part of the Bachelor of Business studies programme
University of Zimbabwe	Module in Entrepreneurship as part of the Bachelor of Business studies programme
National University of Science and Technology	Module in Entrepreneurship as part of the B Com programmes
Midlands State University	B Com (Hons) degree in Management and Entrepreneurship
Harare Institute of Technology	Compulsory module in Technopreneurship as part of B Tech programmes
Great Zimbabwe University	Module in Entrepreneurship as part of the B Com programmes
All Polytechnics	Compulsory subject in Entrepreneurship Skills Development -National Certificate programme in micro-enterprise management - National diploma programme in micro-enterprise management

Such a scenario could have had a bearing on the success or failure of entrepreneurship training efforts at Zimbabwean tertiary education institutions.

Therefore, further exploration of the status and impact of entrepreneurship education in Zimbabwe would be insightful to both scholars and policy makers and result in the enhancement of the entrepreneurship field.

3.8 STUDIES ON THE IMPACT OF ENTREPRENEURSHIP EDUCATION

While a range of studies presented in the previous section suggest strong links between exposure to entrepreneurship education and the entrepreneurship intentions of students, and therefore that entrepreneurship intentions levels exert an influence on future entrepreneurial activity, questions still arise with regard to the generalizability of such findings to diverse contexts (Weber, Graevenitz & Harhoff, 2009; Fayolle & Liñán, 2014). Actually, Sowmya, Majumdar and Gallant (2010) posit that the extent and depth of research on entrepreneurship education outcomes has been outpaced by the rate of entrepreneurship education adoption leading to a scenario where pronouncements on the entrepreneurship education-entrepreneurship intentions relationship are driven by gut-feeling and anecdotal rather than empirical evidence. Criticism of extant research outcomes on the entrepreneurship education-entrepreneurship intentions connection point towards lack of methodological rigour and the multi-dimensional and diverse nature of entrepreneurship education programmes (EEPs) that are assessed. Some of the methodological shortcomings are reflected through the paucity of studies that use pre and post experimental designs and control groups. These are essential in cases where cause and effect relationships between entrepreneurship education and entrepreneurship intentions need to be vividly proven. Also, many of presented the studies focused on EEPs where participation is voluntary. This potentially has the effect of introducing bias associated with self-selected samples. Typically, such samples comprise individuals already positively predisposed towards entrepreneurship.

Evidence from literature suggests that the field of entrepreneurship education is hamstrung with the dearth of watertight frameworks that give a firm foundation to further research on the various facets of the discipline (Fayolle & Gailly, 2013; Maritz & Brown, 2013; Maritz et al., 2014). The existence of diverse of EEPs and their different objectives, target audience and content poses substantive challenges to an

effective assessment of the outcome and value of such programmes (Balan & Metcalfe, 2012). For instance, not all entrepreneurship education and training programmes at tertiary education institutions expect participants to create new business ventures at the point of completion. As already pointed out in previous sections, some programmes seek to create awareness of entrepreneurship as a possible career choice, while others simply seek to enhance the entrepreneurial spirit and behaviour of participants. Therefore, to compare the efficacy of diverse programmes on the basis of numbers of new firms created or new jobs generated, which is the major interest of funders and policy-makers, is rather awkward (Block & Stumpf, 1992). This perhaps builds a case for generating impact assessment criteria other than socio-economic indicators, and here the growing popularity in the use of psychological indicators, such as participants' attitudes, motivation, intention and orientation towards entrepreneurship of participants, in measuring EEPs effectiveness research, becomes instructive.

Some scholars draw on problems associated with using tangible socio-economic variables like new business start-ups as indicators of EEPs outcomes to argue that there is a time lag between participants' completion of EEPs and actual new venture creation, which at times stretches up to 5 years. Attributing current entrepreneurial activity by entrepreneurship education graduates to such past educational experiences after such a time lag is problematic (Hytti & Kuopsjarvi, 2004). Accordingly, it is possible for other factors to intervene in such a way that they enhance one's self-efficacy and propensity to act. For instance, government may incline policy towards supporting entrepreneurship during the episode such that perceptions of risk associated with entrepreneurial activity may dissipate. Therefore, the value of results emanating from measuring entrepreneurship education efficacy using such quantitative measures is dubious.

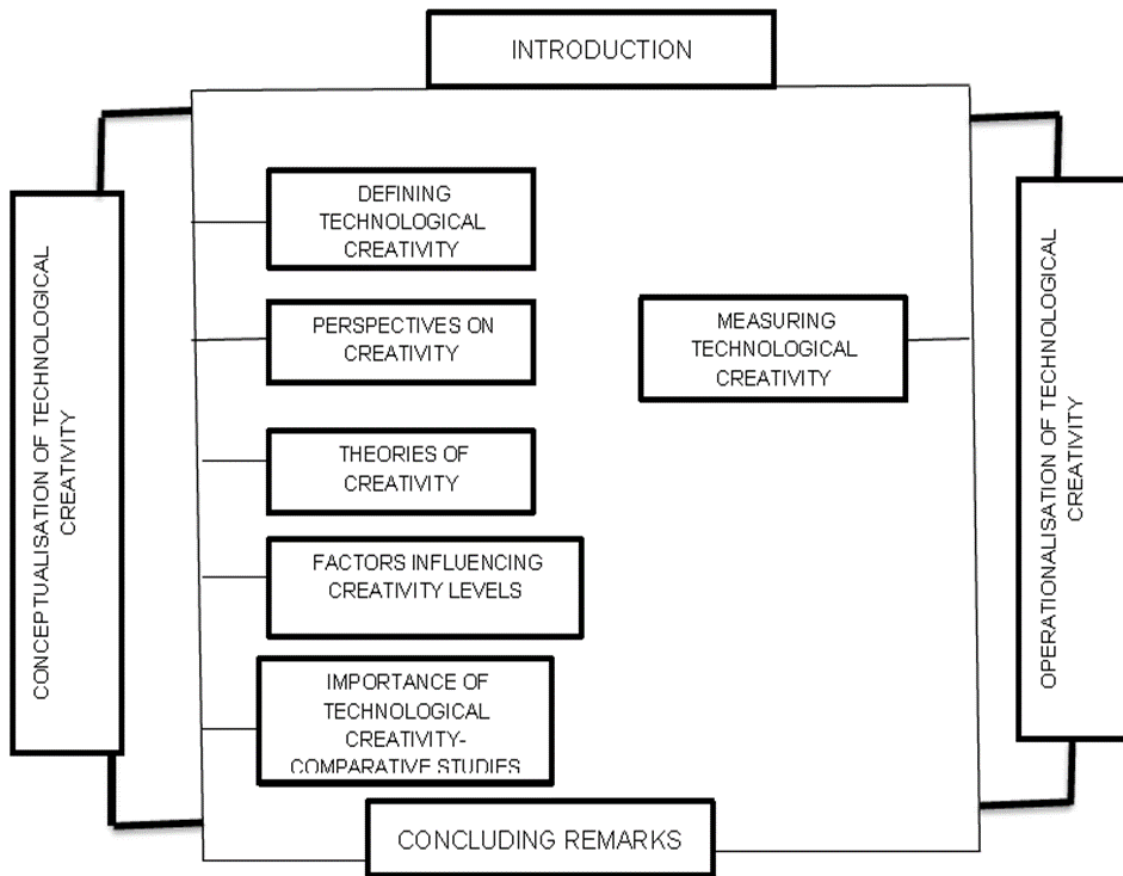
The observation drawn from the preceding literature review, thus, suggests that psychological indicators, such as intention and attitude, offer a viable substitute for measuring the immediate outcomes of EEPs. The observations concur with Johannisson's (1991) taxonomical perspective which outlines five distinct levels of

learning objectives that focus on attitudes, knowledge, skills and tools associated with the entrepreneurship field. Because of this, the current study uses attitude, subjective norms, perceived behavioural control and entrepreneurship intention to ascertain the impact of technological creativity and entrepreneurship education.

3.9 SUMMARY

This chapter focussed on entrepreneurship education, which is one of the independent variables in the study. A review of literature revealed a lack of agreement on how best to assess the outcomes of EEPs. Furthermore, no clear cut conclusion has been reached on the actual impact of EEPs on various learning outcomes, thus clearing the ground for further research on the subject in diverse contexts. Past impact studies have also been criticised for their lack of methodological shortcomings, thus calling for further studies based on more robust methodologies, which is one of the research gaps that this study sought to fill. The next chapter considers the technological creativity (TC) variable.

CHAPTER 4: TECHNOLOGICAL CREATIVITY (TC)



4.1 INTRODUCTION

The previous chapter dealt with the concept of entrepreneurship education (EE). The chapter illustrated that some human qualities attendant to the entrepreneurship process were transferable and hence could be successfully taught and learnt. Importantly, the literature showed that the students' entrepreneurial intentions could be affected by the entrepreneurship education that they receive from learning institutions. This chapter, however, presents an exposition of the concept of technological creativity. The issues presented here demonstrate the intrinsic and extrinsic qualities identified by the literature as shaping the level of individuals' creativity. The importance of technological creativity to different geographic contexts is also discussed and the chapter ends with a focus on the common benchmarks of creativity.

4.2 DEFINING TECHNOLOGICAL CREATIVITY

The technological creativity (TC) construct can be understood by first appreciating the wider meaning of creativity. However, this is a challenging quest considering the complex and multi-faceted nature of the creativity concept, which makes it difficult to define (Berglund & Wennberg, 2006; Perry, 2014). This difficulty is intensified by the domain spanning nature of creativity, which leads to the existence of various types of creativity. These types include artistic creativity, entrepreneurial creativity, scientific creativity, cultural creativity and technological creativity. As such, research on the concept has brought diverse characterisations of the notion.

Typically, the concept of creativity is explained from three main perspectives, which are personality traits (a human quality associated with convergent and divergent thinking), processes involved (the stages that one undergoes to produce a novelty) and the product/output of creativity. This study focuses on creativity as a human and social attribute that makes individuals and society adjust to the mutable environment, reformulate life-challenges, and take risks to try new approaches to problems. Amabile (2012) also considers creativity as the production of a novel and appropriate response, product, or solution to an open-ended task.

The connection between creativity and entrepreneurship is emphasised in the contemporary economic environment (Heinonen, Hytti & Stenholm, 2011; Schmidt, Soper & Bernaciak, 2013). Some scholars even suggest that the process of entrepreneurship is a creative act (Gemmell et al., 2012; Rae, 2012; Wiseman & Anderson, 2013; Zainuddin, Rahim & Rejab, 2012). Thus, it is pertinent to come up with characterisations of creativity that relate to entrepreneurship. Concomitantly, Schein (1985), cited in Nieuwenhuizen and Groenewald (n.d.:73), explains creativity as "...creating something new, for example, creating a new business by developing a new product or service, building an organisation by financial manipulation, reshaping an existing business, creating a business that will exist on its own, and a financial fortune as testimony to the entrepreneur's skill". This view, therefore, cements an often expressed view that entrepreneurship is a creative act.

Having clarified the general application of the creativity concept, the focus now narrows to technological creativity (TC). The notion of technological creativity is prominent in literature on education even though its application is still in the fledgling stages (Mawson, 2007; Johnson & Daugherty, 2008; Lytton, 2012; Collard & Looney, 2014). Common definitions of technological creativity follow Redelinguys and Bahill's (2006) belief that psychologists consider the creativity concept from two perspectives; either as a human trait or as an achievement. This explains the common usage of personality and output scales as measures of one's creativity. Kwon and Ryu (2010) refer to the preceding as definition by inclination or capability factors. The following are, therefore, some of the proposed definitions of technological creativity that follow the prior-stated criteria.

"The way in which individuals apply science to accomplish tasks in a faster and better ways and as a result improve their lives" (Yeh & Wu, 2006:213).

The definition confines the technological creativity concept to the scientific field and emphasises the invention and innovation aspects. These factors are important in contemporary knowledge-based economies where the extent of innovation within individual economies separate advanced from less advanced and hence poor

economies (Schwab & Sala-i-Martin, 2014) and the extent of technological creativity amongst a country's citizens and other inhabitants' impact on the innovation potential within an economy. Another definition of technological creativity is:

“The means, by which individuals design and make products and, as a result, improve the overall quality of peoples' lives” (Lin, Tsai, Chien & Chang, 2013:193).

Like Ye and Wu's (2006) definition underscores the invention aspect of technological creativity, thus linking the concept with the design, development and commercialisation of new products. In addition, the characterisation also emphasises the problem solving nature of technological creativity.

The other definition views technological creativity as:

“A person's capacity to produce new or original ideas, insights, restructurings, inventions or artistic objects, which are accepted by experts as being of scientific, aesthetic, social or technological value” (Wyse & Spendlove, 2007:182).

The above portrayal of technological creativity is more encompassing and incorporates diverse fields of application as compared to the other definitions which focus on the science and manufacturing industrial fields. The definition throws light on the fact that technological creativity applies to various contexts including manufacturing, science, economic, arts, craft and cultural activities. This is best illustrated by Figure 4.1.

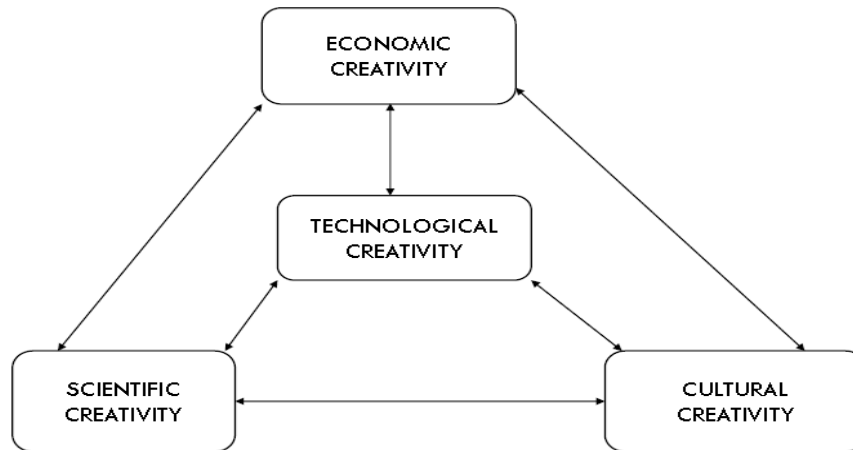


Figure 4.1 Nature of technological creativity

Source: KEA European Affairs in Liu (2015).

The final definition states that:

“Technological creativity is the integration of domain knowledge with the process of the formation of creative thoughts and the results of formative and creative thinking” (Wu, Tsai & Wang, 2011:192).

This definition shifts focus from the physical output and invention biased slant of earlier mentioned definitions to a cognitive emphasis. Hence, the definition underlines the thought processes that precede inventions and innovations. Apparently, technological creativity at the individual level can be assessed using various psychometric and psychographic measures of creative thinking. This description of technological creativity is appropriate when assessing creativity levels of students who, because of their constrained contexts, are not yet in a position to fully express their capabilities through tangible invention outputs. As such, the students can only indicate their technological creativity qualities through their mental inclination.

Given the diverse expositions of technological creativity, the following working definition was adopted for this study.

The inclination towards using field relevant knowledge and skills to experiment with new ideas and ways of doing things so as to generate scientific, economic and cultural solutions to everyday challenges.

It is common practice in literature to conflate creativity with concepts such as innovation and entrepreneurship (Babu et al., 2013; Sarooghi et al., 2015), yet these are distinct concepts. The obvious question that comes to mind is ‘how then does technological creativity relate to innovation and entrepreneurship?’ The question is dealt with in the next subsection.

4.2.1 Innovation and technological creativity

The concept of innovation is defined in diverse ways. Hindle (2009:2) describes it as ‘the process of coming up with novel ideas, means of doing things and technology and putting them into practice by coming up with something of value to customers.’ It is worth noting that it is not enough to generate novel ideas as this only amount to creativity (Mann & Chan, 2011; Somech & Drach-Zahavy, 2013; Ahlin, Drnovšek & Hisrich, 2014). Commercialising the new ideas completes the equation and defines innovation. Technological creativity brings up novel ideas while innovation operationalises them. Bessant and Tidd (2007:12) conceive innovation as a ‘dynamic capability’ for managing the idea generation process and implementation of ideas. This suggests that technological creativity forms the bedrock of every innovation but does not always lead to innovation. In contemporary economies, innovation is an important factor owing to its observed ability to shake markets and create business opportunities that are advantageous to entrepreneurs (Marvel & Lumpkin, 2007; Chesbrough, 2013; Barbaroux, 2014). The connection between innovation and entrepreneurship is highlighted in literature, with novelty considered as an essential element of entrepreneurship (Schumpeter, 2000; Foster, 2015; McKelvey, 2016; Pic & Hindle, 2016). Hence, innovation is affirmed as a predictor or accompanying feature of entrepreneurship behaviour (Hamidi et al., 2008; Zampetakis et al., 2011; Drucker, 2014; Carland, Carland & Stewart, 2015).

Lastly, it has to be borne in mind that in a technology-ridden world, all business ventures can enhance their survival chances through the sufficient acquisition and deployment of the latest technology (Rambe et al., 2015) to meet their customers and other stakeholders' needs. This helps to ensure optimisation of their competitive advantage. For this reason, technological creativity, which predates innovation, becomes that basis for successful new entrepreneurial ventures.

South Africa has substantial policy structures that encourage innovation and technological creativity. These include a ten-year (2008-18) innovation plan (Department of Science and Technology, 2008). The plan, which has billions of Rands committed towards various government and business schemes, focuses on biotechnology and pharmaceuticals, space, energy security, climate change, and the understanding of social dynamics. In addition, South African students have for long been exposed to technology following the Technology 2005 project which was launched in 1994 (Isaacs, 2007). The adoption and implementation of emerging technologies in the South African school curriculum with the use emerging technologies across the education sector is conceived as one of the various attempts to create a knowledge-based society, itself an expression of the practical implementation of the Innovation Plan (Bere, 2013; Bozalek et al., 2013; Pimmer et al., 2014). This project has resulted in a high usage rate of mobile technology and the internet amongst South African youths (Turton & Herrington, 2013). Such usage supports the view that business opportunities thrive for South African youth entrepreneurs due to greater access to market information through mobile technologies and the internet.

The same can be said of Zimbabwean youths who have in recent years increased their mobile technology and internet usage. This follows the adoption of the Zimbabwean School Computerisation Program by the government and the introduction of duty-free importation of ICT equipment (Tsokota & Von Solms, 2013). The first quarter report of the 2014 Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) shows total mobile subscribers at 13 892 109 while the data and internet usage subscribers number was 5 633 242. These figures are

substantial considering that the total Zimbabwean population is above 13 million people (Zimstat, 2012). Tsokota and Von Solms (2013) postulate that the acceptance of ICT by individuals, business and government in Zimbabwe boosts entrepreneurship and generates new services, which aids economic growth.

4.2.2 Entrepreneurship and technological creativity

Research on the technological creativity construct in the entrepreneurship realm is still in its embryonic stage. This is despite the long proposed link between general creativity and entrepreneurship (Shumpeter, 1934; Nystrom, 1993). Scholars claim that an entrepreneurship process is an interactive act of creativity which takes place within diverse circumstances (Rae, 2012; Robert, 2012; Krauss & Sternberg, 2013). Thus the entrepreneurs' engagement in entrepreneurship creates value by producing novelties, initiating and navigating change.

Shumpeter (1934) asserts that through creative destruction, entrepreneurs discard irrelevant products and services and replaced them with new and market-related ones. In the same vein, they creatively combine resources to make a constant stream of innovations that match market opportunities (Kirzner, 1979). Thus, entrepreneurs need to possess skills that include creativity, innovation and opportunity recognition ability. In addition, Fillis and Rentschler (2010) theorise that the entrepreneurship process rests on innovation, risk-taking and pro-activeness. This view is particularly valid in the case of opportunity-driven entrepreneurship which relies on the entrepreneur identifying and mobilising resources to pursue previously unexplored business opportunities.

Contemporary scholars also suggest a close link between entrepreneurship and creativity in modern economies (Hamidi et al., 2008; Tsai & Wang, 2011; Zampetakis et al., 2011; Feldman, 2014; Koppl, Kauffman, Felin & Longo 2015). Krauss and Sternberg (2013) also view the two variables as mutual and inseparable. One of the key qualities of an entrepreneur is the ability to use divergent and convergent thinking to generate ideas, products and services that match existing market requirements or create new market opportunities (Schmidt et al., 2012; Gundry, Ofstein & Kickul,

2014). However, there are contentions to the effect that different phases of the entrepreneurship process require disparate facets of creativity (Edwards-Schachter, García-Granero, Sánchez-Barrioluengo, Quesada-Pineda & Amara, 2015). For instance, the risky early stages of entrepreneurship, characterised by opportunity search and ground-breaking activities, call for divergent thinking, while later stages involving risk reduction, call for a blend of divergent and convergent thinking. Hence, although various faces of creativity exist, they are all central to the entrepreneurial process (Amabile, 2012).

Tsai and Wang (2011) proclaim that creativity enhances the relationship between entrepreneurship and economic vibrancy. Vieten, Nikolic, Fietkiewicz and Stock's (n.d.) study covering 31 metropolitan informational cities from USA, Europe and Asia reveals significant correlations between creativity and entrepreneurship activity. The results arising from the study's consideration of the two indicators of entrepreneurship activity, the number of new businesses created and rate of self-employment, suggested that any perceived positive impact of creativity on economic performance stemmed from the influence of technological creativity and innovation. However, the outcome of the study did not declare an ever present positive relationship between creativity and entrepreneurship in the cities. These conclusions somewhat neutralise suggestions by Shally, Zhou and Oldham (2004) and Wu, Wu, Chen and Chen (2013) that individual creativity levels and the creative environment enhanced creative output. Further observations from the same study note that the correlation between creativity and entrepreneurship varied by region and yielded mixed results. That is, they correlated '...positively in informational regions in Asia, slightly negatively in Europe and very negatively in the USA (Vieten, Nikolic, Fietkiewicz & Stock, n.d.:148). Therefore, on the global scale, creativity and entrepreneurship correlate with each other both positively and negatively depending on the country or continent one lives in, with a positive correlation in informational regions in Asia, slightly negative in Europe and very negative in the USA.

4.2.3 Entrepreneurship intentions and technological creativity

To date, there is no study to this researcher's knowledge that has sought to empirically ascertain the relationship between technological creativity and entrepreneurship intentions. However, there has been some research on the impact of creativity on the entrepreneurship intentions of individuals and this research is also relatively new, having been undertaken in the late-2000s (Hamidi et al., 2008; Zampetakis et al., 2011; Malebana, 2012). Hamidi et al. (2008) conducted a survey on 40 entrepreneurship postgraduate students enrolled in three programs at Swedish universities to assess the relationship between creativity levels and entrepreneurship intentions. The study, which drew on social cognitive theory, tested for the level of entrepreneurship intent and assessed the respondents' creativity levels using the 16PF self-completion questionnaire. The findings from the study suggested that students who engage in entrepreneurship at tertiary education level have higher levels of entrepreneurial intention compared to those who would have not. Concurrently, a positive association between the creativity score of individuals and their entrepreneurship intent was observed. The practical implication of the findings is that incorporating creativity enhancing aspects in the entrepreneurship education curricula at tertiary institutions might increase students' entrepreneurship intentions.

Another study conducted by Zampetakis et al. (2011) in Greece on 180 undergraduate business students reported a positive link between creativity and entrepreneurship intent of students. The innovation variable, in this study and the one by Hamidi et al. (2008), was represented by creativity measures, thus suggesting that creativity is an ideal proxy for innovation at the individual level. Hamidi et al. (2008:306), confirm this in the statement that "...there is a long tradition of viewing innovative business behaviour as an act of creativity and the two are often used synonymously".

The present study used technological creativity as a variation of creativity. As noted earlier, technological creativity expresses one's inclination to experiment with new ideas that seek to generate solutions to everyday problems. Technological creativity, therefore, encapsulates the problem-solving process aimed at generating value for business stakeholders. Rationally, the product of technological creativity is an

innovative outcome which, in a business context, enhances competitiveness, survival and growth (Marinova & Borza, 2011; Tassef, 2013; White, Gunasekaran & Ariguzo, 2013). However, a survey of extant literature suggests that limited studies have been conducted on the impact of technological creativity on entrepreneurial activity in the developing world context. This is notwithstanding the documented potential of technology to drive business activity. No study, to the researcher's knowledge, has been done to probe the joint effects of stimulating technological creativity and exposure to entrepreneurship education on the entrepreneurship intentions of individuals. A study of this nature is, however, critical in contemporary times characterised by loud calls in both South Africa and Zimbabwe to equip youths enrolled at tertiary education institutions with pertinent skills to start and run sustainable business enterprises owing to the existence of shrunken job markets. Importantly, the process of starting a new business is technical and demands qualities, some of which can be enhanced through entrepreneurship education and the uptake of technological creativity.

It is important to underscore that even though technological creativity and entrepreneurship education may converge in so far as they have a common goal of encouraging individuals to create new business enterprises; the two are distinct and separate constructs. Technological creativity, on the one hand, is a pliable human quality that is strongly associated with the generation of problem-novelties (Hamidi et al., 2008) even though such a quality can be enhanced through relevant education and training. There are suggestions that individuals with higher levels of technological creativity are more inclined towards entrepreneurship compared to those of a lesser disposition (Schmidt et al. 2012). On the other hand, entrepreneurship education, in the context of the present study largely relates to any instructional programme that is meant to equip participants with skills and mind-sets essential for new venture creation. The two constructs, however, are related in that it is possible, through the appropriate content and method of delivery, to embed in entrepreneurship education aspects that stimulate technological creativity in individuals (Schmidt et al., 2012). The potency of combining these constructs for the purpose of encouraging innovative entrepreneurship has so far been a subject of conjecture, with no scientific evidence

to back-up this belief. Hence, an empirical study evaluating the collaborative effect of entrepreneurship education and technological creativity on entrepreneurship intentions would fill this research gap. It is plausible that combining factors which have a positive effect on entrepreneurship intention when separately considered may produce a synergetic effect when these are considered jointly.

4.3 FACTORS AFFECTING LEVEL OF TECHNOLOGICAL CREATIVITY

The readiness with which academia and policy-makers have emphasised the significance of promoting creativity in the socio-economic arena (Heinonen et al., 2011; Lukić, 2012; Cahayani, 2013; Hun et al., 2014) raises interest on the need to understand the factors that comprise or influence creativity at the individual level. Regardless of the type of creativity being addressed, these are all subject to a common set of factors which include personal and external factors. For instance, Wu et al., (2013) suggests that creativity is subject to the influence of individual qualities, family background, educational aspect and the community. In addition, Yeh and Wu, (2006) contend that technological creativity is subject to personal, family and social influences, with personal factors exerting the greatest influence on developing technological creativity in adults. For the current study, the researcher adopted Shally et al.,'s (2004) classification of factors which regarded creativity as subject to one's domain-relevant skills, creativity-relevant attributes, task motivation and contextual factors. The next subsection unpacks these aspects.

4.3.1 Domain relevant skills

As already alluded to in the definitional sections, the creativity concept is context specific. Different domains of application of the concept elicit different skills applicable to the existing problem context (Baer, 2012, 2013; Barbot & Baer, 2016). Domain relevant skills thus support any attempt at problem solving (Amabile, 2012; Wu & Chen, 2014) by an individual. The premise is that for one to come up with useful novelties in a particular field, she or he must have deep knowledge and expertise of that field. Typical relevant skill inventories encompass factual knowledge, technical skills and special talents germane to a particular field. In the entrepreneurship field, such skills, therefore, include knowledge about the industry of operation and legal

procedures relevant to starting new businesses, opportunity recognition ability, marketing and financial skills among others. Notwithstanding the essence of domain-relevant skills in creativity, it is crucial to appreciate that they are insufficient on their own to trigger creativity. Amabile (2012) posits that it is possible for any individual to have an abundance of these but what matters is how these can be applied to a problem-solving context. Based on McLean's (2011) view, contrasts can be drawn between a creative expert and a non-creative expert in the problem solving process. If one's skills inventory supports the processes allowing the resolution of problems in new ways, then creative performance would have occurred. If it inhibits the problem solving process, then basic performance, bereft of creativity, would have occurred. In a business context, the situation mentioned above is synonymous with replicative entrepreneurship, while the earlier mentioned situation characterises innovative entrepreneurship.

4.3.2 Creativity-relevant qualities

A substantial body of literature on creativity converge on the view that creativity is subject to the influence of an established set of individual traits encompassing personality and cognitive style aspects (Guilford, 1959; FERENCE, 1979; Prabhu, Sutton & Sauser, 2008; Amabile, 2012; Stopfer, Egloff, Nestler & Back, 2013). There is general agreement that certain human attributes and individual thinking styles are correlated to one's level of creativity (Krauss & Sternberg, 2013; Abadzi, Martelli & Primativo, 2014). Other researchers even suggest causation between personality and creativity, citing the existence of numerous past studies that exhibited both co-variation and temporal precedence between the two variables (Fillis & McAuley, 2000; Hoseinifar et al., 2011; Kwong & Cheung, 2012; Hun et al., 2014).

Personality attributes such as self-assurance, believing in ones' own thoughts, critical perception, innovation, drive, ambition, acceptance of challenge, and intermittent melancholy have been connected to creativity (Torrance, 1988; Sternberg & Lubart, 1996; Cropley, 1999; Hoff & Carlsson, 2002; Moss, 2002; Zhou & George, 2003; Shalley, Zhou & Oldham, 2004). Wu and Cheng (2014) suggest these traits as indicators of high levels of creativity; willingness to challenge convention,

expressiveness, independent thinking and curiosity. Oldham (1996) highlights character attributes such as having wide-ranging interests, fascination with intricacy, possessing a sixth sense, artistic appreciation and acceptance of uncertainty as significant in the reliable measurement of creativity performance in diverse situations. The strong belief in personality as an indicator of creativity can be seen in the frequent use of psychometric instruments as measures of creativity (Cropley, 2000; Zhang et al., 2014).

Some scholars have also connected one's level of creativity with cognitive styles (Nusbaum & Silvia, 2011; Beaty & Silvia, 2012; Runco & Acar, 2012; Baer, 2014). Cognitive style relates to how individuals respond mentally to external information cues. It encompasses how one perceives, think and recall information. Guilford (1965) distinguishes convergent and divergent thinking in individuals as far as creativity levels are concerned. For instance, divergent thinking, which seeks to raise creative ideas through uninhibited and free-flowing thought processes, is underlined as the source of novelty and the essence of creativity. In contrast, the more conforming convergent thinking attempts to solve problems by joining existing fragments of information. However, both forms of thinking are considered critical to entrepreneurship as evidenced in the work of Shumpeter (1934) and Kirzner (1979).

Kirton (2003) also draws comparison between adaptive and innovative cognitive styles. He contends that adopters and innovators occupy two extreme ends of a continuum of problem solving approaches, which ranges from an ability to 'do things better' to an ability to 'do things differently'. The essence of Kirton's argument is that all people have creative and problem solving abilities that vary according to circumstances of application. Adopters are concerned with using tried and tested methods to solve existing problems. Notably they do not seek to engage in risky ventures. In contrast, innovators push boundaries and actively seek challenges which they resolve through unconventional methods (Stum, 2009).

4.3.3 Task motivation

Apart from the personal characteristics, the nature of one's motivation also plays a critical role in determining the extent of individual creativity (Styhre & Sundgren, 2005; Amabile, 1990; Bledow, Rosing & Frese, 2013; Baer, 2014). Past research studies suggest that individuals with high intrinsic motivation, i.e. driven by the need for personal satisfaction and hunger for challenges, take on precarious tasks associated with creativity (Patterson et al., 2009; Gre et al., 2011; Amabile, 2012; Abadzi et al., 2014). In contrast, those individuals who are swayed by the need for external rewards, demands to meet deadlines, surveillance or fear of sanction, are hardly a source of high levels of creativity (Gre, Walters & Kaufman, 2011). Amabile (2012) observes that the existence of extrinsic motivational factors negates intrinsic motivational factors.

However, it is crucial to acknowledge the multiplicative nature of the internal components of creativity, which are the domain-relevant skills, context specific process and task motivation. According to Amabile and Pillemer (2012), for any form of creativity to exist within an individual, all the three components must be present albeit in varying degrees.

4.3.4 Social/ contextual factors

Some suggest that the creativity phenomenon does not occur in isolation. As an everyday aspect of human life, creativity is therefore domicile in specific contexts. Apart from the internal characteristics of individuals, i.e. domain specific skills, creativity-relevant skills and task motivation, there are aspects in the work or social environment that can facilitate or threaten creativity and internal drive in individuals (Amabile, 2012; Amabile & Pillemer, 2012). Amabile (2012:1) suggest that "...norms of harshly criticizing new ideas; political problems within the organization; an emphasis on the status quo; a conservative, low-risk attitude among top management; and excessive time pressure..." potentially hinder the creativity of both individuals and work-groups. Logically, a culture of innovation, supportive management structure, collaborative team-work, among other factors, spurs organisational members into a creative frame of mind. The suggestions on the importance of the social/work context on creativity corroborate Zhou and Hoever's (2014) and Shalley et al.'s (2004)

proposition that workplace constructed social contexts impact on individual creativity by first influencing individuals' intrinsic motivation levels. In examining the factors influencing workplace creativity, Shalley et al. (2004) singles out job complexity, nature of relationship with supervisors, relationship with workmates, reward systems, anticipation of evaluation, time deadlines and goals, and ergonomics as the prominently cited contextual variables in past studies. Whereas the plausibility of some relationships finds support from empirical evidence, others reveal mixed or inconclusive findings. For instance, some studies confirm a positive correlation between employees' perception of job complexity and level of creativity (Nelson & Rawlings, 2009; Amabile, 2012). Thus, a complex task unleashes creative ideas in individuals and vice-versa.

Strong linkages between supervisors' control and employee creativity are also suggested. Supportive supervisory behaviour is noted as leading to the nourishment of intrinsic motivation in individuals and consequently stimulating creativity (McLean, 2011). On the contrary, tight control is noted as stifling creativity (Oldham, 1996; Walton, 2003; Patterson et al., 2009; Madrid & Patterson, 2015). However, mixed results emanate from studies linking co-workers support and individual creativity. Even though some results vouch for the suggestion that a supportive team environment enhances individual creativity and intrinsic motivation, others contradict such arguments (Patterson et al., 2009; Knudsen & Cokpekin, 2011; Abadzi et al., 2014).

While the above discussion offers valuable insight into the external factors that influence individual creativity, it does not directly encompass those factors pertinent to students, in formal school settings, and their preparation to add economic and social value to future society. Nevertheless, contemporary scholarly opinions converge on the essence of creativity and innovation in present and future economic activity which is entrepreneurship driven and knowledge-based (Knudsen & Cokpekin, 2011; Lukić, 2012; Mayhew et al., 2012; Mars, 2013). An exploration, therefore, of the way creativity relates to various contexts and any linkages with entrepreneurship is a justifiable endeavour. A review of extant literature reveals that some scholars have proposed and tested social factors that may exert an influence on students' creativity. This can

be illustrated by Zampetakis et al. (2011) who surveyed 180 undergraduate business students at a British university to examine the link between creativity and entrepreneurial intention in young people and the roles that family and education may play in encouraging this link. While the results suggested a positive correlation between family support for creativity and the creativity levels of student respondents, it was found out that support for creativity in the university did not affect student creativity and their entrepreneurial intentions.

Though the findings cited above are critical as part of pioneer studies in the field, several limitations can be noted. First, the study is confined to a single university in the developed world and chances exist that a different set of results could have emerged if the study been undertaken in a different context or across nations. Second, the study was confined to business students only. A study that comprises students from various fields might have yielded more informative findings. Finally, the study neglected to consider how and why the variables in the study interacted. Although the above-referred study failed to prove a connection between university support for creativity and creativity levels of students, other studies have underscored certain aspects of educational systems as hindering or nurturing creativity. For example, teacher-student interaction can raise or lower the potential of scholars to generate creative ideas. Some contend that creativity in teaching and a support attitude during student-teacher interaction enhances the student's creativity (Csikszentmihalyi, 1999; Moss, 2002; Wu et al., 2014). Apart from that, other scholars still call for the creation of school environments that are conducive to nurturing creativity (Csikszentmihalyi, 1999; Chandler, Keller & Lyon 2000; Chen & Chen, 2010).

Communities at large are, however, cited, outside family and schooling settings, as having a significant role in nurturing creativity through numerous forms of social education (Csikszentmihalyi, 1999; Chandler, Keller & Lyon, 2000) and cultural stimuli (Csikszentmihalyi, 1999; Moss, 2002; Wu & Chen, 2014).

4.4 PERSPECTIVES ON CREATIVITY

As research and interest in fostering creativity has grown over time, it is crucial to outline the diverse perspectives from which the concept is dealt with in order for a better understand. The next section deals with the social, psychology, economics and educational perspectives on creativity.

4.4.1 Social perspective

A review of extant literature on the creativity concept shows that social-based research on creativity assumes a minor significance in relation to psychology-based research. According to Mann and Chan (2011), creativity does not occur in isolation but thrives within a social context and that is, it thrives in social system, institutions, places and domains. This view finds support from several scholars who agree on the perspective that society, at its fundamental level, provides an environment that either inhibit or ignite and nurture creativity both at the individual and group level (Simonton, 2000; Walton, 2003; Chua, 2013; Novy & Colomby, 2013). To buttress this point, empirical research vouches for the importance of the family (Amabile 1996; Zampetakis et al., 2011; Csikszentmihalyi, 2014; Perry-Smith & Mannucci, 2015) and educational context in explaining the individual creativity levels of students (Amabile, 1996; Deacon & Thomas, 2000; Elzubeir & Rizk, 2001; Starko, 2013; Csikszentmihalyi & Wolfe, 2014).

While appreciating the supportive role that social units and systems can play in encouraging creativity, we should be wary of the constraining effect that some social aspects like culture may have on both individual and group creativity. Grounded on Hofstede's (1980) model, some cross-national empirical studies on creativity have shown that some national cultures are characterised by high power distance and uncertainty avoidance acts, which then act as a barrier to individual and team creativity. Power distance is defined the degree "...to which a society accepts that power in institutions and organizations is distributed unequally" (Hofstede, 1980:45). Therefore, the staff in a society characterised by high power distance accedes and is more tolerant to unjust treatment from their supervisor or organization. Thought-provoking findings emerge from Lee, Yun and Srivastava 's (2013) study on the effects

of abusive supervision on creativity at work in South Korea, a country characterised by high power distance. Results from the study revealed a curvilinear relationship between the level of abusiveness and creativity. Lower levels of abuse yielded lower levels of creativity, and when abusive supervision was raised to a moderate level, individuals were galvanised into reflecting better creativity because of mental stimulation and enhanced motivation. However, further exposure to higher levels of supervisory abuse shifted individual focus into stress management mode and thus paying less attention to creativity. The implication of these findings confirms the significance of social influence on creativity.

4.4.2 Psychology perspective

The bulk of past and current research on creativity is rooted in psychology (Lin & Wong, 2014) possibly because of the concept's inextricability with the numerous cognitive (e.g. personality, motivation, thinking styles, intelligence levels, risk tolerance, need for achievement) and affective (e.g. emotions such as happiness, sadness, fear and anger) human aspects that litter the psychology field (Hayton & Cholakova, 2012). The most favoured and more reliable measures of individual creativity are based on psychometric tests (Cropley, 2000; Piffer, 2012, Rust & Golombok, 2014). Key proponents of this approach argue that individual creativity is grounded on one's possession or lack of specific psychological attributes. For instance, many studies reveal creative individuals as characterised by a personality tolerant of change and ambiguity, intrinsic motivation, non-conformity and the need for independence (Berglund & Wennberg, 2006; Fazelian & Azimi, 2013; Fillis & Rentschler, 2010; Hun et al., 2014).

Guilford (1967), a pioneer in modern cognitive psychology claims that there is a tight positive correlation between divergent thinking traits and creative abilities in individuals. The strength of this contention finds support in the abundance of creativity testing psychometric instruments that seek to establish individual creativity on the basis of one's divergent thinking tendency. For instance, Torrance (1966) developed the Torrance Tests of Creative Thinking (TTCT), which comprises numerous tasks encompassing divergent thinking to test the creative idea generation capacity of the

test participant. The test is pillared on establishing four divergent thinking abilities comprising fluency—the number of pertinent answers given; flexibility—diversity of categories of responses; originality—the ability to come up with unique but germane responses to questions asked or tasks given; and elaboration of the extent of details used to build on given answers (Torrance, 1966; 1974). The bottom-line of the above exposition is to show that creativity comprises measurable, stable traits or factors that differentiate creative individuals from others. Due to the abundance of supportive studies bolstering this perspective, the researcher concedes to the eminence of self-rated psychological traits-based scales in assessing creativity levels and applied some of these in the data collecting process.

4.4.3 Economics perspective

Conventionally, there are no standing economic models that give prominence to creativity at the individual, firm, market or industry levels. Save for the historical mention of the role of creativity by Schumpeter (1934) and Kirzner (1979) in disrupting and restoring market equilibrium, the researcher is unaware of any other prominent economic theory encompassing creativity. Schumpeter (1934) hypothesised that entrepreneurs destabilise markets by innovating. Here, the role of the entrepreneur is to create new products and processes and introduce them to the market, thus upsetting the market in the process. The Kirznerian view, on the polar opposite, advances the role of the entrepreneur as that of bringing order to the market by noticing unfilled opportunities and then creatively combining economic resources to fill the gap. Thus, entrepreneurs restore symmetry to markets by creating value for consumers and at the same time realise their own goals. While the two perspectives view the role of the entrepreneur in the market from divergent views, they nevertheless agree on his/her creative role.

Meanwhile, there has been significant renewed interest in the economic role of creativity by both world bodies and policy-makers over the past decade (Creative Economy Report 2008; UK Department of Culture, Media & Sports (DCMS), 2008) and academia (Audretsch, 2006; Andersson, 2012; Griffiths et al., 2012; Piperopoulos, 2012; Wiseman & Anderson, 2013; Zainuddin et al., 2012). This follows the perceived

eclipsing of the industrial economy by the knowledge economy as an engine of economic growth (Mann & Chan, 2011; Edmondson, 2012; Acs, de Groot & Nijkamp, 2013). This belief is captured in the following statement by the then Singaporean Prime Minister, cited in the *Imagine Australia* Report (2005:6), that: “For many years, we concentrated on the economic side. But if you want the economic side to flourish, you need more entrepreneurs, you need more creativity. The two must go together”.

Large, global firms in the electronics and pharmaceutical industries have thus jumped on the creativity bandwagon as evidenced by their fervent support of idea generation, research and development activities (Mann & Chan, 2011). Some nations in the BRICS block, which consist of Brazil, Russia, India, China and South Africa, especially China and South Africa, have already taken active steps in laying a foundation for creativity-driven economic activity (Zhang et al., 2008; Sun, 2012; Odora, 2015).

Although there is a high risk of the impact of creativity on economic performance being over-hyped, the current study concedes the significance of imaginative human capital in the transition of economic structures of nations. It recognises the suggestions by (Kelley et al., 2010) that the extent of development of a nation’s human capital and innovation capabilities separate under-developed factor-driven economies and advanced, innovation-driven economies.

4.4.4 Educational perspective

The concept of creativity has seized the minds of education practitioners and policy - makers since the turn of the new millennium (Penaluna et al., 2010; Lourenço & Jayawarna, 2011; Schmidt et al., 2013; Saliceti & Morin, 2015). This is due to the fact that educational practitioners have a key societal role to facilitate the formation of social identities (Williams, 2010). Therefore, any discourse that relates to bringing social change through modifying human capital is of interest them. Hence, the fact that creativity has an important role to play in modern society, leads to the raising of the question whether creativity can be taught and how it can be enhanced in educational settings.

A cursory survey of literature reveals that existing education policies in many parts of the world do not expressly emphasise the need to entrench creativity among students. Kneller (1965:77) asserted that "...one of the most justifiable charges that can be levelled against our education system is that it has neglected, or too often suppressed, the natural creativity of the young". The same opinion has been expressed in relation to many educational systems in contemporary society (Abadzi et al., 2014), and more over, the charges spread to include all levels of education (Sarri et al., 2010; Lourenço & Jayawarna, 2011; Dlouhy, 2012).

Hence, there are calls for educational institutions to inculcate creativity in their curricula in order to produce graduates with "...two sorts of high-level expertise: one emphasising discovery and the other focusing on exploiting the discoveries of others through market-related intelligence and the application of personal skills" (Yorke 2006:5). In fact, graduate value emphasis has shifted from the possession of domain specific skills to creativity and context-relevant attributes (McWilliam, 2010; Noel & Qenani, 2013; Thomas & Day, 2014). Saliceti and Morin (2015:1177) suggest that such perceived critical skills and attribute can be infused, "If school is the finest place of education, where the thinking is built and trained, it is essential to give students the chances to develop the ability to understand and give their point of view and play their own roles within a global and interconnected the society. This way, students will understand and discuss complex relations concerning all the aspects of the society, getting new ways of thinking and behaving".

While conceding that creativity can be learnt at school, Mann and Chann (2011) suggest that there is a lack of reliable evidence that vouch for the plausibility of disseminating creativity to students using generic instructional means. This calls for further research from diverse contexts on the subject. This study, therefore, attempted to add its voice on the creativity-educational context relationship discourse by exploring the subject from a cross national and tertiary education level context.

4.5 THEORISATION OF CREATIVITY

Although creativity is a complex construct which has attracted various theories spanning across fields, only three and most pertinent theories are dealt with in this study. These are the investment, systems and everyday thinking theory.

4.5.1 Investment theory

The investment theory of creativity presumes that creativity is a habit which every individual is capable of acquiring if they take conscious efforts to do so. This theory, which was postulated by Sternberg and Lubart (1999) and Sternberg (2012), states that the level of creativity in individuals is an outcome of six distinct but interconnected factors, namely intelligence, knowledge, personality, motivation thinking styles and one's context. Most of these factors are also mentioned as influential factors in Amabile's (2012) Theory of componential creativity. This implies that the creativity variable is integrative collectively dependent on numerous factors.

However, the quality of creativity in the problem solving process depends on personal characteristics, level of motivation, the extent of commitment to a task and the context within which the problem solving exercise is taking place. Abadzi et al. (2014) introduce an interesting perspective to the discourse by suggesting that creativity is not a mathematically predetermined outcome of the total of the suggested factors. Instead, it varies depending on circumstances. In line with this, McClean (2011) suggests that creativity is a pliable individual trait that can be enhanced through training. Diverse creativity programmes for various levels and contexts are developed though some are criticised for lacking empirical research backing. In the context of the current study, it is therefore necessary to ascertain the collective impact of the technological creativity acquired through entrepreneurship education on entrepreneurship intentions of tertiary education students. In closing, it is important to note that the investment theory of creativity has not been exposed to extensive empirical testing, with only three significant studies being noted in literature (Lubart & Sternberg, 1995; Zhang & Sternberg, 2011; Zhang, 2013).

4.5.2 Systems theory

The systems theory, a product of Csikszentmihalyi (1999, 2014), suggests that creativity is an outcome of the interaction between three distinct sub-components of a system, which are person, domain and field. The person is the source of creative ideas and products necessary for various problem solving contexts (Csikszentmihalyi & Wolfe, 2014a). The domain is the social system within which the person is domiciled. It sets boundaries to the potentially creative person by stipulating what is acceptable or unacceptable output from the creative individual (Csikszentmihalyi, 2014b). The field comprises experts who approve or disapprove the relevance or usefulness of the novelties from the person. Once the field accepts creative output it sends it to the domain for use and social embedding. One notable study that empirically tested the applicability of the systems theory was by Gardner (1993). The results of the study revealed that creative activities emanated from an incongruity within a structure or mild coincidences in time among the field, domain and the individual.

4.5.3 Everyday creativity theory

According to Abadzi et al. (2014), every individual is creative in some way. The difference, however, lies in degree and context of creativity (Tanggaard, 2013; Sylvia et al., 2015). The implication here is that creativity is an inborn human characteristic. This finds support in the work of Kaufmann and Beghetto (2009) who propose a continuum of creativity ranging from the little-c, on one end, to the Big-C, on the other. This range encompasses the creativity found in every person and the kind found in geniuses of specialist fields. Between the extreme ends of creativity lies the mini-c, which is closely related to the little-c that involves the creation of integration of knowledge and experiences (Runco & McGarva, 2013; Sriraman, Haavold & Lee, 2013). Closer to the Big-C is the pro-c which is possessed by individuals who are field experts. This creativity, to a large extent, depends on training and technical competence. The output from such kind of creativity might bring drastic changes to a field. As a result, the Theory of Everyday creativity is popular with educators and trainers in various fields who believe that since some level of creativity is embedded in every one of us, it is possible to stimulate and augment students' already existing creativity.

4.6 MEASURING TECHNOLOGICAL CREATIVITY

There exists convergence of opinion amongst psychology scholars on the complexity and multi-dimensional nature of the concept of creativity. The nature of the variable makes it open to assessment from various angles. Several variables are suggested as measures of creativity in industry and commerce situations. McClean (2011) proposes four measures that comprise supervisory evaluation of employees' creativity, the number of invention disclosures authored, the number of patent applications filed, and the number of patents awarded to each employee. Conceivably, such measures would be inappropriate for assessing the creative ability of students emerging from theory-based courses and thus alternative measures should be considered. However, Rhodes (1987) quoted in Berglund and Wennberg (2006) proposes that creativity is measured along these perspectives; creative person, creative process, and creative product. Given the increasing relevance of technology innovations in contemporary social and economic contexts, this study thus examined creativity from a technology and entrepreneurial dimension. The next subsection is devoted to these aspects.

4.6.1 The creative process

This relates to how individuals end up with creative outcomes. The cognitive processes that generate creative ideas in individuals take centre stage here (Schmidt et al., 2012). There are numerous tools for various age groups and contexts that seek to assess creative thinking and reasoning in individuals. The most popular instruments seek to test divergent thinking, which is associated with the generation of novelties through non-conforming thought processes, and convergent thinking, associated with synthesising existing ideas to solve an existing problem.

While there are several techniques for measuring individual creativity, one of the popular measures is the Torrance Tests of Creative Thinking (TTCT), which was developed by Torrance (1974). Building on the work of Guilford (1967), the test uses verbal and non-verbal aspects to assess divergent thinking traits in individuals. However, the TTCT can only be administered by registered Torrance practitioners.

Technological creativity is a new concept, as a result, existing specific tests for TC are designed for children at elementary and high school levels (Yeh & Wu, 2006; Lin 2009). Thus they are inappropriate for measuring creativity for the students at post-school levels of education. In that scenario, literature guided and tailor-made scales or measuring TC in college and university students are therefore convenient.

4.6.2 The creative person

Measures on the creative person are based on the assertion that there are a set of personality features that set aside creative people from uncreative. They classify individuals according to their creativity styles. Cropely (2000) notes that the measures used for assessing a person's creativity include biographical inventories, special personal properties and motivation and attitudes as potential indicators of levels of creativity. Unlike measures of the creative process that assesses personal creativity on the basis of tasks completed, individuals either rate themselves or against another person familiar with the individual rating one's creativity based on scales.

Biography inventory scales require respondents to comment on personal aspects of their lives as a base for determining the level of individual creativity. As an illustration, Schaefer and Anastasi's (1968) biography scale asks individuals to comment about their: family background; intellectual and cultural orientation; motivation; breadth of interest; and drive towards novelty and diversity.

The responses derived from respondents are then weighted and scored in terms of one's artistic creativity and scientific creativity. The scale has been successfully used on high school students with a comparatively higher degree of validity and reliability for artistic creativity but lower accuracy for scientific creativity.

Special properties as measures of creativity have focused on creative behaviours, creative styles and innovativeness. The most common scales either (a) require test participants to self-rate on their likely responses in different learning or problem solving contexts or (b) ask proximal observers, such as classmates, teachers or parents, to

score their behaviours in different learning and problem solving scenarios. Examples of such tests include the Creativity Styles Questionnaire (CSQ) by Kumar, Kemmler and Holman (1997); Group Inventory for finding creative talent (Rimm & Davis 1980); and the Abedi-Schumacher Creativity Test (Abedi, 2002). These instruments are a mix of observer and self-rating tools. The last set of creative person measure is based on individual attitudes and motivation. Illustrations of such tests include, The Creatrix Inventory (C & RT) (Byrd, 1986), Adaptation-Innovation Inventory (KAI) (Kirton, 1989) and Kirton's Adaptation and Innovation Inventory. In recent times, the creative self-efficacy (CSE) (Karwoski, 2011) and creative personal identity (CPI)-Karwoski (2016) indices have also been put forward as good measures of a person's creativity.

Cropley (2000) states that inter-rate reliabilities are adjudged to reach 0.9 with internal consistencies frequently clocking 0.8. This perhaps explains the greater popularity of psychometric tests as measures of individual creativity. However, hindrances to further studies on creativity, particularly in the developing world, are reflective of the restrictions placed on the instruments. Some instruments require special licencing and training, while others have to be administered by the proprietors only. As a result, scholars have to devise alternative instruments without compromising validity and reliability.

4.6.3 Creative product

The outcome of a creative process should manifest in a creative product (Amabile, 2012). Elements of originality, novelty and usefulness should be exhibited in the creative product. Conventional wisdom suggests that a second party be the judge of such creativity, instead of self-rating (Kaufman, Baer, Cropley, Reiter-Palmon & Sinnott, 2013). Logically, an expert in the area of concern should adjudicate on the process. Typical examples of measures used in the process include Cropley and Kauffman's (2012) Creative Solution Diagnosis Scale, Taylor's (1975) Creative Product Inventory and Besemer and O'Quin's (1987) Creative Product Semantic Scales. The earlier measure assesses creative products on the basis of generation, reformulation, originality, relevance, complexity, and hedonis condensation. The later measure evaluates products on the basis of novelty, resolution, elaboration and

synthesis through semantic differential scales. The preceding scales have been used with high internal reliability ratings of up to 0.93 (Cropley, 2000).

4.7 IMPORTANCE OF TECHNOLOGICAL CREATIVITY

The increasing importance of technology and innovation in contemporary socio-economic changes means that the moving forces behind the accumulation of technological knowledge merit special mention (Cordes, 2005; Ru, Zhi, Zhang, Zhong, Li & Su 2012; Christensen, 2013). In a preface to the book entitled *Creativity and Innovation in Business and Beyond*, Mann and Chan (2011: xvii) claim that it is through creativity and innovation that humankind has coped with life and survived its accompanying challenges. Creativity has enabled humankind to devise better ways of working, travelling, communication, growing food, health care and recreation among a host of other end products of the creative process (Goggin, 2012; De Corte., Linn, Mandl & Verschaffel, 2013; Kilpeläinen & Seppänen, 2014; Wang, Xiang & Fesenmaier, 2016). The link between creativity and technology has thus assumed much more significance, as illustrated by high standards of life in countries where the two concepts are more developed. High-value technology industries commonly form the pillars of economies of nations where technological creativity is abundant. Typical examples of such nations where technology-driven industries thrive, include Japan, South Korea and China. Creativity is perceived as providing the essential raw materials for launching and sustaining such vibrant endeavours. Therefore, human capital, capable of using scientific knowledge in ways that add value to industry, commerce and society at large, is a valued asset to any nation (Marvel & Lumpkin, 2007; Musteen & Ahsan, 2013; Marvel, Davis & Sproul, 2014). Such appropriate assets have for long been a missing link in poor countries matrix (Brixiova, Ncube & Biaba, 2015).

Innovation is considered as the key quality separating highly developed economies from lagging ones (Singer et al., 2015a). This is shown in these indicators of economic development; number and quality of jobs created, nourishment levels, access to quality education and health care, the extent of infrastructural development, technology absorbency, ease of doing business among others (World Bank, 2014). With regressive effect, less-developed countries trail behind advanced ones on the

mentioned aspects. The more advanced and innovation driven nations create more and better jobs, have better educational opportunities, provide better quality health care, have a solid and sophisticated infrastructure and are relatively easy to do business with (Mayhew et al., 2012; Rae, 2012). The outcome of such characteristics is improved economic productivity, economic growth and global competitiveness. In the next section, the importance of technological creativity is evaluated from various regional perspectives. This is done to provide a frame of reference for the South Africa and Zimbabwe, which are the subject of this study.

4.7.1 USA

The USA economy is acknowledged as the largest and most diverse economy in the world (World Bank, 2014). For a long time shadowed by other sectors of the economy, the creative sector has attracted the attention of economists and public policy-makers through a significant contribution towards the national gross domestic product (Colapinto & Porlezza, 2012; Piergiovann, Carree & Santarelli, 2012; Chaston & Sadler-Smith, 2012; Flew, 2013). The creative economy here is defined as involving 'both individuals and entities who engage in activities that add value to society in one or more ways through the provision of goods and/or services that are inextricably linked to human creativity manifesting itself in one or more dimensions throughout the process of ideation, creation, production, distribution, and use' (Harris, Collins & Cheek 2013:2). Austin City, in Texas, reported that in 2010 alone, its creative sector's economy accounted for over \$4.35 billion in economic activity, \$2 billion in value-added, earnings of \$1 billion in labour compensation, over \$71 million in City tax revenues, and almost 49,000 permanent jobs (Austin Creative Sector Economic Impact Update, 2012:1). Evidently, creativity has made vast contributions to the economy through the generation of revenue for the government, job creation and improving standards of life. The same report also claims that the creative economy (measured in terms of employment) grew by almost 25% over the past five years, well ahead of the growth rate of the entire local economy (Austin Creative Sector Economic Impact UPDATE, 2012:2). To bolster the above claim, the UNCTAD Creative Economy Report (2010) shows that the creative economy contributed \$341,139 million making up 3.3% of GDP in 2002 only. Notably, the creative sector includes cultural

activities rich in many African countries but does not generate as much economic value as in the USA.

4.7.2 Asia

Hong Kong forms an interesting case study for evaluating the significance of creativity in the Asian context. According to Hun, Cheung and Hung (2014), Hong Kong is a nexus of western and Asian cultures because of its colonial connection with Britain and its attachment with China. Therefore, it combines the individuality and sense of independence characterising western cultures with the collectivism and conformity typifying the Chinese culture (Lee & Gopinathan, 2015; Lo & Ng, 2015).

It is interesting that research evidence shows that although Hong Kong is preserving its Chinese culture, the country is open to global economic and technological developments (Zhao, 2013; Li, Song, Cao & Wu 2013; Lau, 2015; Todd, Leask & Fyall, 2015). This is illustrated by the inclusion and emphasis on creativity in the metropolis' educational curricula. Creativity is highlighted as one of the key generic skills that the educational system should infuse in all students going through the country's educational system.

The reativity drive is explicitly supported by the central government, as shown by the pronounced desire to make Hong Kong a city of creativity in the Asian region (Hun et al., 2014). This commitment is also demonstrated through the efforts to come up with a Hong Kong creativity index which measures the creative vitality of the Hong Kong economy in the Asian region. In fact, a preface to the report on a study on the creative index undertaken by the Hong Kong Department of Home Affairs, reflects the permanent secretary of the department's written expression that economic and technological trends increasingly driven by continued globalisation forces in the 21st century require as noted in the statement that, 'New ways of arranging business ...Economies must be prepared to cope with the flow and clustering of capital, talents and industries. Innovations in technologies, consumer experience and service provision, and the social institution and lifestyles which accommodate innovations are imperative' (Hong Kong Creative Index Study Report, 2005:7).

A December 2014 government Fact Sheet on the Creative Industries in Hong Kong shows that the country has vibrant creative industries that included film, television, music, design, architecture, comics and animation, games and digital entertainment. The same report shows that 'Hong Kong has around 37 000 cultural and creative industry-related establishments, with over 200 000 practitioners engaged. The cultural and creative industries create an added value to Hong Kong's Gross Domestic Product (GDP) of nearly \$98 billion annually, representing around 4.9% of the GDP.' The above statistics, therefore, underscore the significance of creativity in the Asian region.

4.7.3 EU

The EU regional bloc has long recognised the economic significance of creativity as underscored in the EU Commission's declaration of the importance of creative industries in Europe's economic growth and global competitiveness (Lazzeretti, 2012; Pratt & Hutton, 2013; Nathan, Pratt & Rincon-Azner, 2015). Ernst and Young Consultants reported that in 2010 only, creative industries generated annual revenue of €535.9 billion and employed over 7 million workers. A 2010 TERRA Consultants report on the state of the creative industries in the EU region showed substantial economic contributions by the industries. The report illustrated that in year 2008, approximately 14 million people (6.5% of the total EU workforce) worked directly or indirectly in the creative industries. Apart from that, the same industries contributed 6.9% or about €860 billion to the EU's GDP. Such has been the significance of creativity to the job creation and economic well-being of the region that alarm has been raised on another negative manifestation of technological creativity i.e. digital piracy. It is estimated that creative industries in the EU incur substantial losses due to such destructive creativity. In 2008 only, creative industry players dealing in film, TV series, recorded music and software suffered retail income deficits of €10 billion and 185 000 jobs were shed mostly due to the negative impact of digital piracy. Prognosis of further losses then showed that between 2008 and end of 2015, retailers would have lost about €240 billion in revenue accompanied by 1.2 million jobs cuts.

4.7.4 Africa

The importance of creativity to the African continent needs not be over-emphasised (Asongu, 2014; Sternberg, 2016). Yet the full potential of the creative economy in Africa has not been fully exploited (Unesco Creative Economies Report, 2013). For example, it is reported that creative economies in Africa contributed less than 1 % of the global total, and yet the 2013 UN Special Report on the creative economy suggests that creativity and innovation is a vehicle for 'inclusive, equitable and sustainable growth and development' (Unesco Creative Economies Report, 2013). There are arguments that the African continent is rich on creativity and innovation, features which can be traced decades back, and yet Africa is beset with poverty, inequity, unemployment and unsustainable economic activities.

One success story pertaining to the creative economy is the Festival sur le Niger in Mali which is an entrepreneurship model based on the creative industries (Unesco Creative Economies Report, 2013). The thrust of the model is to promote sustainable artistic, social, economic, artistic and environmental development to local communities by hosting three creative arts festivals per annum. In 2012 alone, the festivals attracted 26,180 participants of which approximately 4300 were foreign nationals. Between 2010 and 2012, foreign currency inflows amounting to US\$ 5 million accrued to the local economy courtesy of the arts, tourism and trade industries. Apart from that, 2000 jobs are created annually. The above statistics from the Malian context, which highlight multi-faceted tangible contributions of the creative economy, raises interest on how its promotion as a vehicle for sustainable economic growth can improve the welfare of the African community.

4.7.5 South Africa

The economic potential of the creative industries in South Africa have long been apparent (Booyesen, 2012). As early as 1998, the South African Government's Department of Arts, Culture, Science and Technology commissioned the Creative South Africa Report (1998), which outlined the strategy for realising the economic potential of the cultural industries in South Africa. The cultural industries covered by the strategy included the following:

- Music (classical, popular, folklore);
- Visual arts (painting, sculpture, public arts and the decorative arts);
- The publishing sector based on writing and literature (books, magazines, newspapers);
- The audio-visual and media sector (film, television, photography, video, broadcasting);
- Performing arts (theatre, dance, opera, live music);
- The emerging multimedia sector (combining sound, text and image);
- Crafts (traditional art, designer goods, craft art, functional wares and souvenirs);
- Cultural tourism;
- The cultural heritage sector (museums, heritage sites and cultural events such as festivals and commemorations);
- Design;
- Industrial design and fashion; and
- Graphic arts (including advertising).

The strategy recognised the potential of these industries to generate employment for the unemployed and contribute to the GDP in an environment where the potential of traditional industries to generate employment has declined, a point that has been supported by the UNESCO Creative Economies Report (2013). The 1998 Report, back then, cited the SA music industry as generating an annual turnover of R900 million per annum. The music industry itself was estimated to be worth R2 billion and employing approximately 12 000 people. The same report estimated the whole SA entertainment industry as worth about R7, 4 billion and employing about 20 525 people. Film and television were worth R5, 8 billion then.

The importance of the creative economy in the SA economy has also been reflected at the provincial government level. The Gauteng Provincial government in 2006 developed and approved the Creative Industries Implementation Strategy Framework, which was progressively implemented and yielded tangible results.

4.7.6 Zimbabwe

Zimbabwe is arguably one country in the world which faced the worst economic crisis in the past decade (Makumbe, 2014; Stoeffler, Alwang, Mills & Taruvinga 2015; Dube & Chipumho, 2016). However, the economy has somewhat stabilised following the dollarisation in 2009 with annual inflation rates coming down to below 5 % and marginal improvements in GDP being recorded (Zimstat, 2011). What has, however, not disappeared are the high unemployment and poverty levels given the poor performance of traditional economic anchors of agriculture and the manufacturing sectors in the Zimbabwe economy. Industrial firms across sectors have closed thus rendering many people jobless and deprived of means of livelihood. To prevent overreliance on dying economic sectors, alternative means of raising national productivity and generating employment must be found. The UNESCO Special Report on Creative Economies (2013) suggests that developing creative industries provides a potent substitute and complement to the primary and secondary sectors of the economy and helps diversify the economy as well as generate revenue and promote trade and innovation. In the same report, it stated that creative industries can revive dying urban areas particularly those whose performance was intertwined with success or demise of a certain industries.

However, it is difficult to statistically verify the relative contribution of the creative economy in the Zimbabwean context as these statistics are not readily available. However, the Zimbabwe Cultural Statistics Survey Report (2012) highlighted the huge impact made by the cultural industry (a part of the creative sector) in drawing tourist inflows and building the country's image. The survey report focused on Performance and Celebration; Visual Arts and Crafts; Literary Arts and Publishing (Books and Press); Film, Audio-visual and Interactive Media; Design and Creative Services and the Tourism, Sports and Recreation fields. Table 4.1 shows the percentage and raw data statistics of people employed in the cultural sector in Zimbabwe.

Table 4.1 Employment statistics in the Zimbabwean Cultural Sector

Domains	Male	Female	Total
Performance and Celebration	30.7	28.2	29.8
Visual Arts and Crafts	8.9	10.4	9.4
Literary Arts and Publishing (Books and Press)	29.8	23.3	27.5
Audio Visual Interactive Media	19.6	13.3	17.3
Cultural and Natural Heritage	8.0	12.9	9.7
Design and Creative Services	3.0	12.0	6.2
Total Percent	100	100	100
Total Number	14 366	7 922	22 288

Source: Zimstat Cultural Statistics Survey Report (2012:8)

While noting the high levels of formal unemployment, the above table shows the substantial contributions that creative industries make towards the creation of employment. The economic contributions of creative industries are not confined to employment provision, but trade as well. Cultural industries also contribute to the country's national exports.

In addition, Table 4.2, below shows that the cultural industry contributed 0.73 % towards total exports in 2009, 0.41 % in 2010, 0.34 % in 2011 and 0.38 % in 2012. The decline in the level of exports may be attributed to the liquidity constraints and inadequate support for the creative industry in the country, which is an occurrence widespread in the country.

Table 4.2 Exports from cultural industries

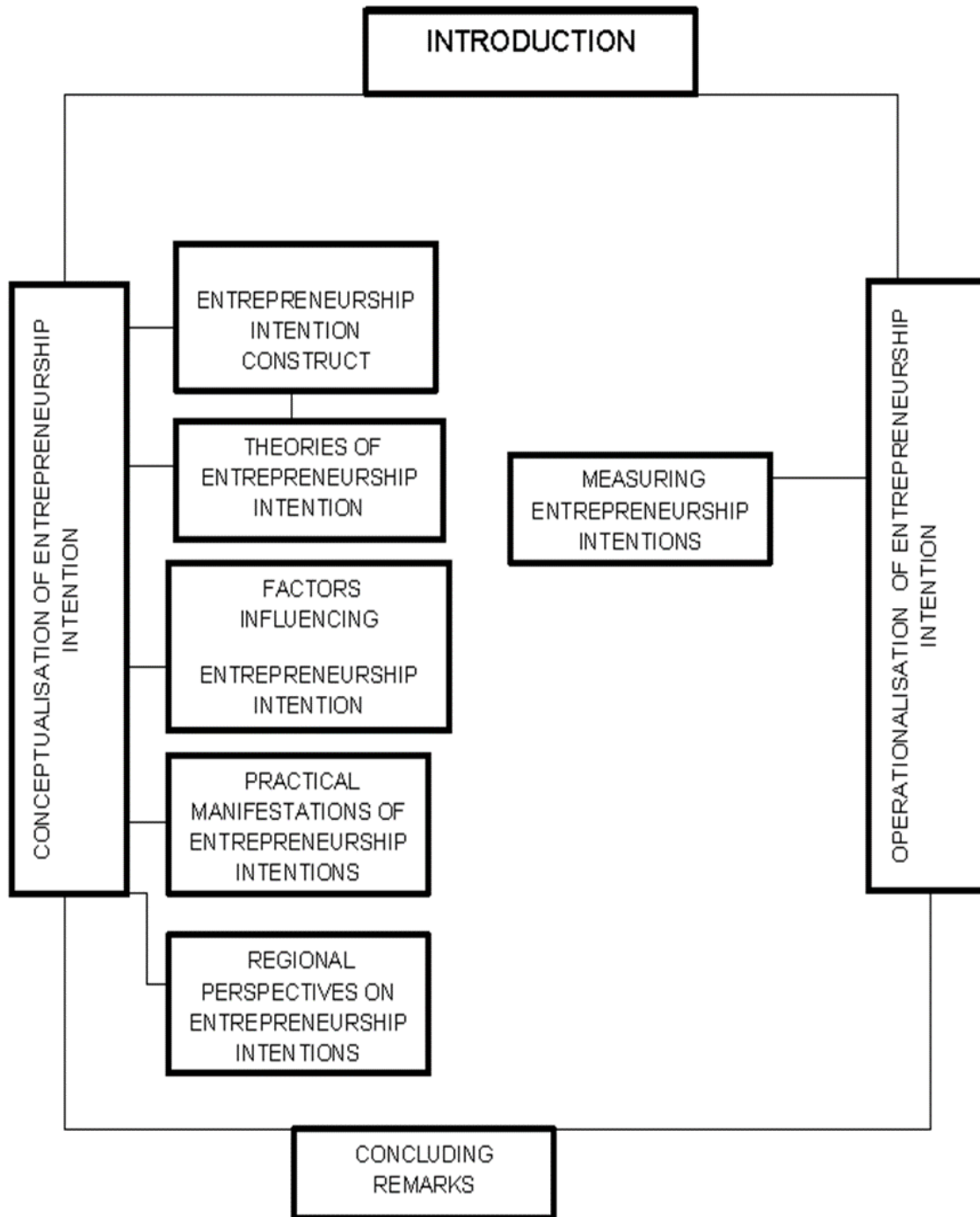
Domain	Year			
	2009	2010	2011	2012
Cultural and Natural Heritage	14 216 902	10 220 808	8 400 962	10 733 149
Performance and Celebration	40 847	115 787	57 971	338 679
Visual Arts and Crafts	2 094 217	2 851 726	3 695 435	3 573 828
Literary Arts and Publishing	71 680	121 064	81 521	91 122
Film, Audio-Visual and Interactive Media	0	0	100	4 780
Design and Creative Services	0	0	940	0
Total	16 423 646	13 309 384	12 236 929	14 741 558
Total Exports (All Products)	2 249 754 511	3 245 451 707	3 557 026 418	3 883 643 863
Percent Share	0.73	0.41	0.34	0.38

Source: Zimstat Cultural Statistics Survey Report (2012:9)

4.8 SUMMARY

This chapter introduced the concept of technological creativity (TC), emphasising its derived and embryonic nature as an area of research. It emerged that technological creativity is subject to scientific, economic and artistic creativity and some scholars argued that it could be measured using tangible output or mental inclinations. Also, addressed were the theories and perspectives pertaining to creativity. The importance of the creativity and entrepreneurship connection in contemporary economies was highlighted. The significance of creativity and innovation to different geographical contexts was also emphasised. The next chapter deals with the entrepreneurship intention variable, which was the dependent variable in this study.

CHAPTER 5: ENTREPRENEURSHIP INTENTION



5.1 INTRODUCTION

This chapter follows on the previous two chapters that underscored the need to undertake studies to evaluate the collective influence of entrepreneurship education and technological creativity on the entrepreneurship intentions of tertiary education students. Both chapters revealed that past studies treated entrepreneurship education and entrepreneurship intention, on the one hand, and creativity and entrepreneurship intention, on the other, separately. It is ironic that in an era where the global economy is increasingly innovation-driven (Chatterji, Glaeser & Kerr, 2013; Wiseman & Anderson, 2013) and technologically astute entrepreneurship human capital is arguably in short supply (Baumol, 2005; Griffiths, Kickul, Bacq & Terjesen, 2012), no study to the researcher's knowledge has probed on the collective impact of technological creativity and entrepreneurship education on the entrepreneurship intentions of potential entrepreneurs like tertiary education level students. Thus, it is important to explore the entrepreneurship intention concept, well aware of the fact that various combinations of factors may effectively influence it. What follows is an outline of the context in which the concept of entrepreneurship intention will be understood.

The chapter opens with various definitions of entrepreneurship intention. The main controversy here is the lack of a one size-fit all definition for the concept since it has been defined in various ways depending on context. Thompson (2009) claims that such a scenario hampers both theoretical and empirical progress in entrepreneurship research. This is followed by a discussion on the importance of researching entrepreneurship intentions. In this segment, a robust justification for an in-depth review of those factors impinging upon individuals' levels of entrepreneurship intentions is provided. Alternative approaches and theories in entrepreneurship intention and lastly, area studies relating to levels of entrepreneurship intentions and associated factors are also reviewed.

5.2 THE ENTREPRENEURSHIP INTENTION (EI) CONSTRUCT

Any entrepreneurial activity is a culmination of human action (Heinrichs & Walter, 2013). As a result, it is critical to appreciate the processes that predate actual entrepreneurial activity if one is to understand why people engage in entrepreneurship

behaviour. This is pertinent to policy-makers and other stakeholders who are interested in increasing the quantity and quality of entrepreneurs in their respective economies. As explained by Ajzen (2015) and Fayolle, Liñán and Moriano (2014), individuals consciously decide and opt to become entrepreneurs. In other words, entrepreneurship is an intentional activity and logically entrepreneurship intention is a precursor of entrepreneurship behaviour. In light of the preceding exposition, it is necessary to clarify the concept of entrepreneurship intention.

Just like defining entrepreneurship, outlining entrepreneurship intention is one of the most challenging undertakings owing to the numerous variants comprising entrepreneurship intention (Fayolle & Linan, 2014). Examples include corporate entrepreneurship intention, social entrepreneurship intention, academic entrepreneurship intention, and family entrepreneurship intention (Fayolle & Liñán, 2014). Evidently, work still must be done in the theoretical and empirical front to come up with an uncontested definition of the concept. As it stands, the concept of entrepreneurship intention has been used interchangeably with other related but different aspects such as entrepreneurship attitude, orientation, inclination and readiness and proclivity (Thompson, 2009). For this reason, dissimilar measures for entrepreneurship intentions are applied in different contexts leading to disparate outcomes for entrepreneurship intentions. This has arguably impeded progress on entrepreneurship intentions research.

Existing literature provides many useful definitions of entrepreneurship intention. To start with, it is useful to appreciate that the intricacy of human nature lies in that some individuals show more tendency towards performing certain actions as compared to others. A cognitive state reflecting a propensity to perform a certain action is known as intention (Uddin & Bose, 2012). It is a self-prediction of future behaviour and represents one's readiness to act and results from prior conscious mental processes (Ajzen, 2001, 2015). Therefore, an intention is an antecedent of behaviour, except in knee-jerk reaction situations. Whether an individual engages in entrepreneurship out of prior preparation or impulse determines the nature of the venture they will create, with those who do prior planning creating more sustainable ventures (Krueger, 2006;

Herrington & Kelley, 2012; Singer, Amoros & Arreola, 2015). This point is of interest to policymakers, more so in emerging economies, seeking to find effective ways of influencing the levels of entrepreneurship intentions and behaviour in their respective countries.

5.3 THEORIES OF ENTREPRENEURSHIP INTENTION

The roots of entrepreneurship intention models are traceable to cognitive social psychology theory, which postulates that behaviour is pre-planned and a direct outcome of prior intentions (Krueger, Hansen, Michl & Welsh, 2011; Ferreira et al., 2012; Tomski, 2014). Shapero and Sokol's (1982) model of entrepreneurial event sets the scene for theorising entrepreneurship intention, although it was initially not meant to be an entrepreneurship intention theory. This was followed by Bird's (1988) somewhat less influential model of implementing entrepreneurial ideas. Ajzen's (1991) Theory of Planned Behaviour, a modification of Ajzen and Fishbein's (1980) Theory of Reasoned Action, was next in the chronological order, although this was also not specifically intended to explain entrepreneurship intention but human behaviour in general. Other less prominent theories have been proposed, but these are rather modifications of earlier and seminal theories. While the theories lay emphasis on different variables, a common thread running through them is the antecedence of intention to behaviour. The main theories are discussed below.

5.3.1 The theory of entrepreneurial event

The theory of entrepreneurial event is a creation of Shapero and Sokol (1982). The initial aim was not to explain entrepreneurial intentions but to provide a framework for comprehending the incident of new business venture creation. However, some scholars (Fayolle, 2006; Kirby, 2013) propose that aspects of entrepreneurial intentions are manifest in new business start-ups.

The Shapero and Sokol model suggests that in the absence of any push or pull incidents, individuals will always be in a state of lethargy and content with their circumstances. Thus, a significant event, called a displacement event with potentially far-reaching effects on their livelihood will force them to consider alternative responses

to their changed life circumstances (Krueger, Reilly & Carsrud, 2000; Elfving, Brännback & Carsrud, 2009; Lin, Carsrud, Jagoda & Shen, 2013). The event may have either positive or negative effects on their current livelihood, thus pulling or pushing them towards considering entrepreneurship careers. Typical push factors include job loss, job dissatisfaction at work and a salary cut at work. Pull factors comprise the existence of a perceived rewarding market opportunity in entrepreneurship, but the need for independence and promulgation of support structures for new business start-ups, actually encourage entrepreneurship (Krueger & Brazeal, 1994; Ismail, Shamsudin & Chowdhury, 2012; William & Williams, 2014). However, research shows that the effect of the trigger event is subject to one's perception of the plausibility of entrepreneurial behaviour (Krueger & Brazeal, 1994; Krueger, 2003; Krueger, 2006; Krueger et al., 2011; Ngugi & Gakure, 2012).

The TEE suggests that the credibility of what is chosen depends on its perceived desirability and feasibility and one's propensity to act. Desirability relates to the disposition of individuals and their social circles towards phenomena (Saadin & Daskin, 2015; Bulanova, Isaksen & Kolvereid, 2016). This can either be favourable or unfavourable. Nevertheless, high favourability increases one's intention to engage in entrepreneurship and vice-versa.

Perceived feasibility means self-opinion on one's capacity to complete and have control over a task (Krueger & Brazeal, 1994; Saadin & Daskin, 2015; Bulanova, Isaksen & Kolvereid, 2016). High confidence in one's ability to execute a task enhances the chance of one intending to engage in a particular behaviour. Lack of self-belief in the capacity reduces the intention to engage in an entrepreneurial behaviour (Jain & Ali, 2013; Kibler, Kautonen & Fink, 2014). Thus, it is imperative for entrepreneurship education programmes to adopt methods and course characteristics that enhance the participants' self-belief and confidence as well as reduce their fear of failure, if more potential entrepreneurs are to be groomed.

To conclude, the propensity to act refers to one's inclination towards executing a particular behaviour (Krueger & Brazeal, 1994; Yatribi, 2016). This is based on one's

perception of impediments or support structures for a particular activity (Turton & Herrington, 2012). The existence of overwhelming impediments will lower one's propensity to act while the presence of support structures will inspire the propensity to act. Hence, this study speculates that effective course content and an engaging delivery of entrepreneurship education programmes in educational institutions may reduce the perception of impediments and enhance students' propensity to act in an entrepreneurial way.

In closing, Figure 5.1 below depicts how perceptions on desirability, propensity to act and perceived viability influence the intention to venture into business and the actual decision to create a new business venture.

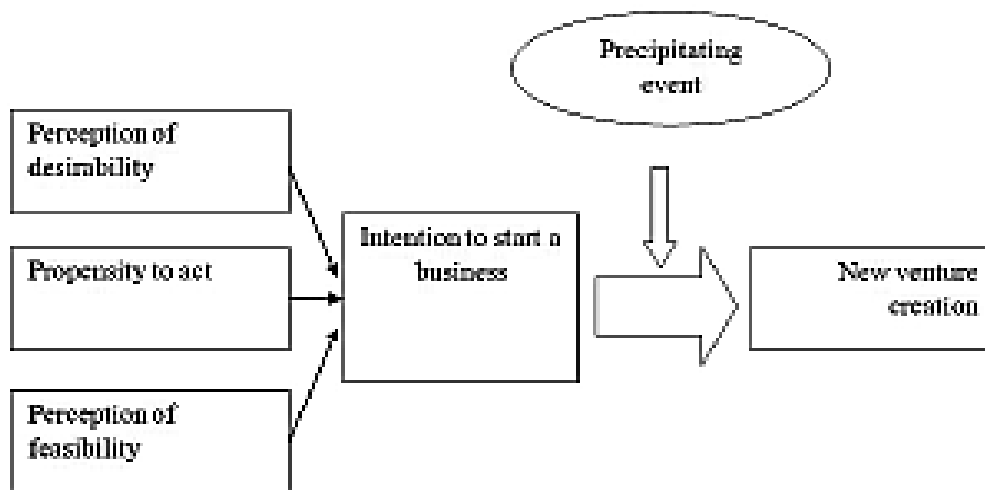


Figure 5.1 Theory of Entrepreneurship Event
Source: Shapero and Soko (1982)

5.3.2 The model for implementing entrepreneurship ideas

Bird's (1988) theory on implementing entrepreneurship ideas is one of the major but under-researched contributions to entrepreneurship intention theory, following Shapero and Sokol's (1982) model. According to the theory, for entrepreneurship intention and entrepreneurial activity to occur, rational and intuitive thoughts must interact within various personal and social-political contexts. Though not intended to be an intentions theory, this model explains how individuals engage in entrepreneurship activity (Bird, 2015). It explains the creation of new business or the

growth and expansion of existing enterprises. This theory is also juxtaposed to entrepreneurship intention theory in that any deliberate action is preceded by a cognitive predisposition to engage.

The main difference of this theory from the other intentions theory is that it distinguishes conscious and unconscious decision making in entrepreneurship intention formation. The model is illustrated in Figure 5.2 below.

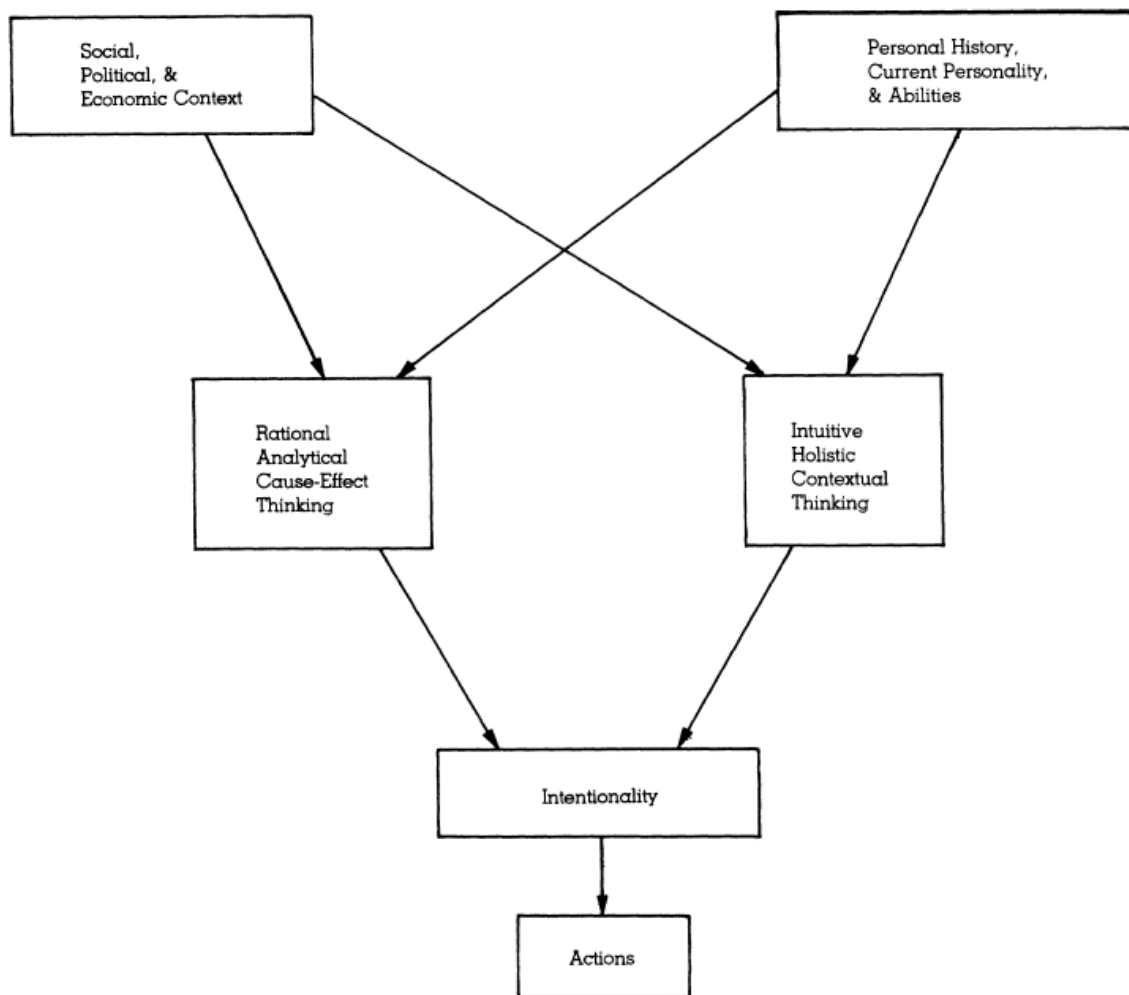


Figure 3.2 Bird's Model on Implementing Entrepreneurship Ideas

Source: Bird (1988)

The merit of Bird's model lies in its recognition of the importance of intentions in the new venture creation or expansion process. Therefore, the model concedes that there can be no new business creation or growth process without solid intentions to act thus (Krueger, 2003). While the model acknowledges the positive result of contextual and personal factors on the formation of intention, it does not elucidate the mechanism through which this occurs. Confronted with this potential shortcoming, Boyd and Vozikis (1994) altered Bird's model by incorporating the attitude and self-efficacy variables. They argue that the preceding two factors moderate the effect of personal and contextual factors on intentions. The suggestion is that perceived self-efficacy and attitude control the relationship between entrepreneurship intention and behaviour and that the existence of a high probability of these intentions amongst individuals results in a natural process of entrepreneurship activity.

5.3.3 The theory of planned behaviour

The Theory of Planned Behaviour falls within the cognitive psychology domain (Krueger, 2003; Ojastu, Chiu & Olsen, 2011; Gemmell, Boland & Kolb, 2012; Lina, 2013). It emerged after noting the perceived predictive weakness of predating attitude-behaviour theories (Kautonen, Gelderen & Fink, 2013). The alternative explanation was that behavioural intentions predict and/ or explain volitional behaviour better than attitudes (Ajzen, 1991; Fini, Grimaldi, Marzocchi & Sobrero, 2009; Engle et al., 2010). This obtains irrespective of whether the behaviour is eventually executed or not.

The model builds on Ajzen and Fishbein's (1980) Theory of Reasoned Action, which postulates that human volitional behaviour is an upshot of the two constructs, one's attitude towards a peculiar behaviour and one's subjective norms in relation to that conduct. Mathematically, the relationship between the three constructs is expressed as:

$$A + SN = BI \text{ where;}$$

A= attitude towards a particular behaviour,

SN= Subjective norms in relation to the conduct,

BI= Behavioural Intention.

Each of the variables is now discussed.

Attitudes

The nature of the entrepreneurship process requires that individuals draw on their evaluation of perceived and expected consequences of their actions to exploit economic opportunities (Krueger Jr, 2000; DeTienne & Chandler, 2004; Antonites & Vuuren, 2005; Hansen, Lumpkin & Hills, 2011). Thus, people will form attitudes towards expected results on the basis of their perceptions on anticipated costs or benefits. Attitude towards behaviour relates to the extent of a favourable or unfavourable predisposition towards specific behaviour that an individual has (Schwarz, Wdowiak, Almer-Jarz & Breitenecker, 2009; Packham, Jones, Miller, Pickernell & Thomas, 2010; Teixeira, 2010). According to the Theory of Planned Behaviour, intentions are shaped by the collective effect of two related factors and these are one's beliefs about the expected consequences (negative or positive) of engaging in a particular behaviour (entrepreneurship) and practicality (likelihood or unlikelihood) of a particular action (Ajzen & Fishbein, 1980). If both aspects of beliefs and perception of practicality are viewed in a positive light, then an approving attitude towards intended behaviour will result, and vice-versa. Thus, the issue here is whether attitudes are positive, negative or neutral.

Previous empirical studies on different countries at different stages of the economic development spectrum show that the attitude towards the behaviour variable is a strong determinant of entrepreneurial intention (Autio et al., 1997; Fayolle et al., 2006; Fayolle & Gailly, 2013; Fretschner & Weber, 2013). Malebana and Swanepoel (2015) and Malebana (2014) observe, in studies of entrepreneurial intentions of South African students at two rural universities, that attitude towards entrepreneurship exerted the greatest variance (45.8%) on entrepreneurial intentions when compared to the other two variables in the Theory of Planned Behaviour (subjective norms and perceived behavioural control). The findings corroborate those from Marques, Ferreira, Gomes and Rodrigues's (2012) study of secondary school students in Portugal, which found a strong and statistically significant relationship between attitude towards behaviour and the entrepreneurship intention of students.

Subjective norms

Subjective norms (SN) are about the influence exerted by those within one's social circle including parents, family, friends and workmates (Liñán, Rodríguez-Cohard & Rueda-Cantuche, 2011; Gerba, 2012). Ajzen (2001) terms this the social pressure to engage or not to engage in a particular activity. The question to answer is 'Do those socially close to me approve or disapprove of the particular action that I contemplate engaging in?' According to Malebana (2014), individuals are more pushed to engage in a particular behaviour if they feel that the people whom they look up to engage in the specified behaviour, and the other way round. Thus, social mentors and role models can either stifle or promote the entrepreneurial intentions of those who look up to them for guidance. However, it is important to note that influence exerted by those significantly close is moderated by whether one takes heed of their expectations or not (Krueger et al., 2000; Fayolle & Gailly, 2013).

The view that subjective norms influence entrepreneurial intention is supported by several studies from within and outside the entrepreneurship realm (Krueger, 2000; Gerba, 2013; Bae, Qian, Miao & Fiet, 2014). Findings from several studies suggest that of the three antecedents of entrepreneurship behavioural intention, subjective norms have the weakest predictive power (Linan & Chan, 2009; Jamie & Oswald, 2011; Sommer, 2011; Marques et al., 2012; Fayolle & Gailly, 2013; Malebana, 2014). It is worth mentioning that although behavioural intentions are subject to one's attitude and subjective norms, the two variables do not contribute in equal measure to the strength of behavioural intention. Rather, the extent of the influence of each construct is subject to individual and circumstantial factors.

Perceived behavioural control (PBC)

The existence of weaknesses in the original Theory of Reasoned Action weakened its predictive and explanatory power that Ajzen (1991) had to modify it and term it the Theory of Planned Behaviour (TPB). Besides including the previous two antecedents of behavioural intention (attitudes and subjective norms), the new theory integrated a third one, perceived behavioural control. Perceived behavioural control refers to self-perception of one's ability to execute a particular behaviour or course of action

(Ferreira et al., 2012; Sampedro & Fern, 2014). This construct is synonymous with Banduras' (1970) self-efficacy concept and Shapero and Sokol's (1982) perceived feasibility of behaviour variable (Krueger & Carsrud, 1999; Krueger et al., 2000; Krueger, 2006). The modified theory, the Theory of Planned Behaviour (TPB), is presented in Figure 5.3.

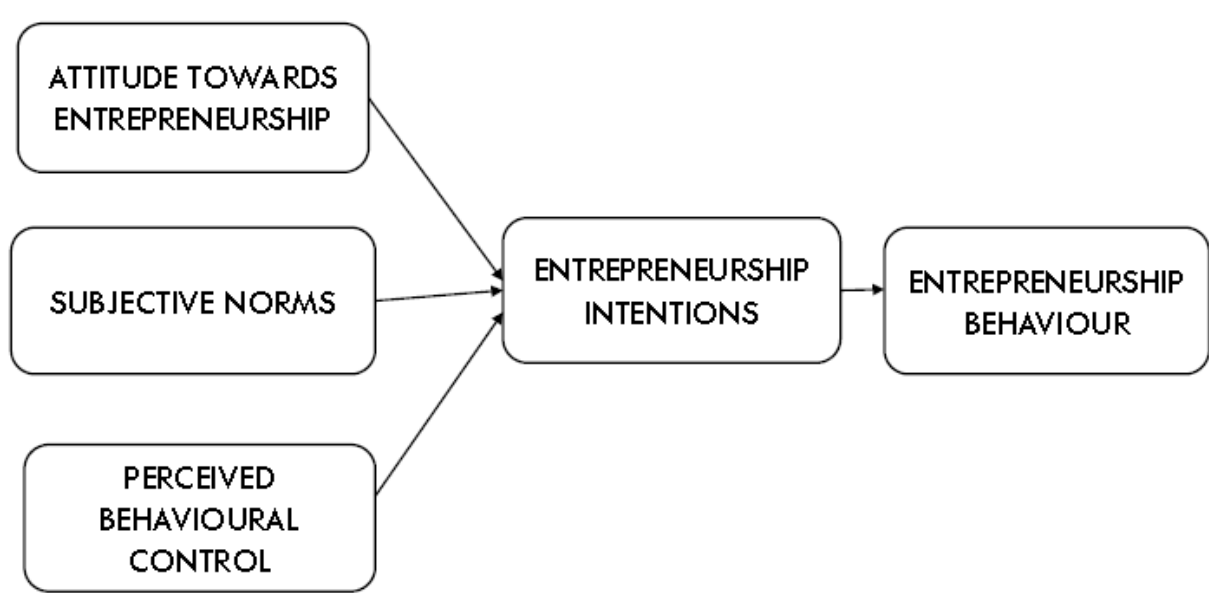


Figure 5.3 Depiction of the Theory of Planned Behaviour
Source: Ajzen (1991)

Empirical studies in various fields confirm the Theory of Planned Behaviour's increased predictive ability of behavioural intention following the infusion of the third antecedent to the original two (Liñán, Sevilla, Economía & Rodríguez-Cohard, 2005; Schwarz et al., 2009; Liñán & Chen, 2009; Liñán et al., 2011; Fayolle & Gailly, 2013; Fretschner & Weber, 2013). It is postulated in the latest version of the theory that the three antecedents of behavioural intention are themselves subject to the influence of one's belief system i.e. behavioural, normative and control beliefs (Ajzen, 1991). It is worth mentioning that though behavioural intentions are subject to one's attitude, subjective norms and perceived behavioural control, the three variables do not contribute in equal measure to the strength of behavioural intention (Krueger et al., 2000; Krueger, 2006; Fayolle & Gailly, 2013; Malebana & Swanepoel, 2015). Rather,

the extent of the influence of each construct is subject to individual and circumstantial factors (Franke & Luthje, 2003).

5.3.3.1 Application of the model

The Theory of Planned Behaviour has proven to be a robust and empirically valid model for predicting or explaining voluntary human behaviour within the entrepreneurship field and other areas as well. These applications include the prediction of voting behaviour (Maloney, Lapinski & Neuberger, 2013), birth control behaviour (Hanson, Nothwehr & Romitti, 2015) and consumer behaviour among others (Ajzen, 2015). On average, results of the cited studies demonstrate that attitude, subjective norms and perceived behavioural control explain a 50 % variation in behavioural intentions of respondents. In addition, intention account for the 30% variation in actual behaviour.

However, several criticisms have been raised concerning the Theory of Planned Behaviour in explanatory and prediction studies. One criticism that has been levelled against the model is that not all human behaviour is rational and based on a conscious decision-making process (Othman, Hashim & Wahid, 2012). Instead, some argue that intuition or impulses and other subliminal cognitive processes contribute a greater extent towards numerous individual human activities (Howard, 2013; Zaki & Mitchell, 2013; Alos-Ferrer & Strack, 2014).

While the perspective that reason fundamentally premises human action cannot be denied, what is questioned is the adequacy of its explanatory or predictive power. As indicated earlier, past empirical studies show that intention explains about 30% of variations in individual human behaviour (Gelderen, Brand, Poutsma & Gils, 2008; Liñán & Chen, 2009). That alone shows the significant limitations on the explanatory power of the model notwithstanding the versatility of the contexts to which it is applicable. It is worth pondering whether a 30% predictive power for entrepreneurship intentions is adequate or there is need to modify the model in an effort to enhance its effectiveness.

Lastly, in as much as the TPB outlines attitude, subjective norms and perceived behavioural control as the immediate antecedents of behavioural intentions, it does not identify the numerous factors that influence the three antecedents of entrepreneurship intentions. This, therefore, calls for continuous exploratory research that seeks to identify and validate the possible and most significant factors that may exert an influence on attitude, subjective norms and perceived behavioural control. Notwithstanding its perceived weaknesses, the model of planned behaviour and its variations will continue to be the most used and reliable model for predicting and explaining voluntary human behaviour.

5.3.3.2 Theory of entrepreneurial event versus the theory of planned behaviour

The theories of planned behaviour and entrepreneurial event show more commonalities than differences. As already explained, the Theory of Planned Behaviour explains entrepreneurship intentions in terms of personal attitudes, subjective norms and behavioural control, while the theory of entrepreneurial event (TEE) does so in terms of one's perceptions of perceived desirability, feasibility and one's propensity to act. Both theories converge on the standpoint that entrepreneurial behaviour is subject to the entrepreneurial intent construct and its antecedents (Fayolle & Gailly, 2013). In addition, both models accept that entrepreneurial behaviour is subject to personal and contextual factors but through the mediation of entrepreneurial intention and its various antecedents (Krueger et al., 2000). Thus, the two theories explain the mechanism through which personal factors influence entrepreneurial behaviour, a feature that is not obvious on Bird's intention model.

Notably, both theories comprise a common variable associated with Bandura's self-efficacy concept as one of the key determinants of entrepreneurial intentions and behaviour. For the Theory Planned Behaviour, the self-efficacy concept is synonymous with the perceived behavioural control notion, while the TEE uses the perceived feasibility notion (Ngugi & Gakure, 2012). Empirical studies on both models prove the two proxies of self-efficacy to be more potent predictors of entrepreneurship intentions and subsequently behaviour as compared to other attitudinal antecedents (Bullough et al., 2014; Piperopoulos & Dimov, 2014). The strength of the self-efficacy

factor shows individual judgement of one's ability to engage in entrepreneurship in the face of facilitating and inhibiting factors.

The Theory of Planned Behaviour's two attitudinal factors, personal attitudes and subjective norms, closely identify with the TEE model's perceived desirability variable. Van Geldren et al., (2006) highlight that when compared to self-efficacy, these similar expressions of desire which are more or less non-committal have weaker explanatory and predictive power. Thus, people with high positive attitudinal levels towards entrepreneurship will not always engage in entrepreneurial behaviour if they have low levels of self-efficacy (Monsen & Urbig, 2009; Bullough et al., 2014; Piperopoulos & Dimov, 2014).

Perhaps the most significant difference between the two models is the 'propensity to act' variable that features on the TEE model. This factor separates those who will remain aspiring entrepreneurs and those who will actually engage in entrepreneurship. It translates mere intention into action (Pittaway & Cope, 2007).

As earlier indicated in the introductory chapter, the researcher adopted the Theory of Planned Behaviour as a guiding framework for this study. The choice of the Theory of Planned Behaviour, despite its almost equivalent predictive power with the TEE, was informed by the relative differences in terms of clarity and proven validity between the two theories. To Gelderen et al. (2008), the constructs comprising the Theory of Planned Behaviour are clearer and less confusing than those of the TEE as evidenced by the consistent results it has yielded in previous studies. Another merit of the Theory of Planned Behaviour is its history of wider application and proven credibility across research fields (Lortie & Castogiovanni, 2015). Thus, apart from being an already tried and tested model, the adoption of the theory in this study provides a further opportunity to compare and cross-validate findings from the current study and those from other research fields.

5.4 MEASURING ENTREPRENEURSHIP INTENTIONS

The recognition and acceptance of entrepreneurship intention and its antecedents as good predictors of entrepreneurial behaviour has necessitated the need to ascertain good measures of entrepreneurship intentions. This need is felt more when there is a proliferation of programmes to enhance entrepreneurial activity owing to increasing youth unemployment (Fayolle et al., 2006; Mwasalwiba, 2012; Maritz & Brown, 2013). Accurate measures can help us know whether efforts to arouse entrepreneurship awareness are paying off (Thompson, 2009). This has not been an easy task given the confusion of entrepreneurship intentions with some related concepts (Douglas, 2013; Fayolle & Liñán, 2014; Liñán & Fayolle, 2015). For example, an entrepreneurship intention is mixed up with concepts that include entrepreneurship orientation, potential entrepreneur, nascent entrepreneur, entrepreneurial proclivity and emerging entrepreneur. As a result, an all-encompassing measure of entrepreneurship intention has not yet emerged (Van Gelderen et al., 2006; Weber, 2012).

Existing measures of entrepreneurial intention comprise both categorical and continuous measures. Respondents may be required to respond 'Yes' or 'No' to the question; 'Do you intend to start your own business in the near future?' Otherwise, respondents may have to indicate the probability of them starting their own business by highlighting either of the two options, 'Probably' or 'Not probably.' The use of categorical measures to gauge entrepreneurial intention has however been criticised by Thompson (2009) who argues that 'entrepreneurial intention is not a simple yes or no question' (Kautonen, Gelderen & Fink, 2015; Bulanova, Isaksen & Kolvereid, 2016). Instead, the scholar suggests the use of continuous measures that utilise a continuum of responses, typically in Likert-Scale format. Some scholars used this approach jointly with one or two categorical questions (Fretschner & Weber, 2013; Bae, Qian, Miao & Fiet, 2014; Piperopoulos & Dimov, 2014). Hence, in line with the practice, the approach of combining minimal categorical and more continuous scale questions is utilised in this study.

Van Gelderen et al., (2006) observe measures that can assess the level of entrepreneurship intention focus along four major themes, which are desires, preferences, plans and behavioural expectancies. Desire-based measures of intention used in past studies consisted of categorical questions like 'Do you want to start your own business?' or statements requiring expression of the level of agreement like, 'I'm going to start my own business within one year of graduation' (Armitage & Connor, 2001) or 'I'm ready to make anything to be an entrepreneur; If I had the opportunity and resources, I would love to start a business (Linan & Chen, 2009).

Preference-based measures of intention have also utilised expressions of agreement on a Likert scale to statements such as; 'Amongst various options, I would rather be anything but an Entrepreneur; A career as an entrepreneur is totally unattractive to me' (Linan and Chan, 2009). Plan-based measures of intention have also used a similar approach to preference-based measures of intentions. Respondents are usually asked to give their level of agreement to typical statements like, 'Do you plan to be self-employed in the foreseeable future after you graduate?' (Luthje & Franke, 2003) or 'My professional goal is becoming an entrepreneur, I will make every effort to start and run my own business, I'm determined to create a firm in the future, I have very seriously thought about starting a business, I've got the firm intention to start a firm someday' (Linan & Chen, 2009). Van Gelderen et al. (2006) argue that behavioural expectancies offer a better prediction of entrepreneurial intentions than other measures, and the former elicit responses to statements like, "Estimate the probability (0-100%) you will start your own business in the next 5 years?" (Krueger et al., 2000).

Students' entrepreneurial intentions have generally been accessed using self-completion questionnaires comprising close ended questions. Questions to establish the level of entrepreneurship intention centre on the three antecedents identified by Ajzen's TPB. The questions measure attitude towards entrepreneurial behaviour, subjective norms and perceived behavioural control. The next sub-section addresses the various sub-components meant to measure entrepreneurship intention.

5.5 FACTORS INFLUENCING ENTREPRENEURSHIP INTENTIONS

Whereas an examination of the most applied entrepreneurship intention theories in empirical studies emphasises that entrepreneurship intention is preceded by attitude, subjective norms and perceived behavioural control (Ajzen, 1991; Engle et al., 2010; Liñán et al., 2011; Fayolle & Liñán, 2014) or perceived desirability, perceived locus of control and risk propensity (Krueger et al., 2000; Krueger, 2006; Krueger et al., 2011), these only play either a moderating or mediating role on the effect of other endogenous and exogenous factors such as entrepreneurship education, personality and demographic factors. Marques et al., (2012) contend that categories of psychological, behavioural and demographic factors influence the level of entrepreneurship intention of individuals in so far as they are the antecedents of intention. Apart from that, a survey of literature reveals that entrepreneurship intention, through its antecedents, is subject to entrepreneurship education offered at university contexts (Maritz & Brown, 2013; Pouratashi, 2014; Roxas, 2014). It is on this basis that the conceptual model of the current study is modelled. Other researchers point towards the importance of regional factors (Liñán, Urbano & Guerrero, 2010), prior entrepreneurial experiences (Lans, Gulikers & Batterink, 2010), and human and social capital (Mosey, Noke & Binks, 2012) in shaping entrepreneurial intentions. What follows is an in-depth examination of these categories of factors influencing entrepreneurship intentions.

5.5.1 Demographic factors

The relationships between demographic and individual factors on one side and entrepreneurship related activities on the other have been extensively investigated in the past (Liñán & Chen, 2009; Haus, Steinmetz, Isidor & Kabst, 2013; Brownson, 2014). For instance, some studies suggest that there is a significant connection between entrepreneurship intention and factors such as education levels and past entrepreneurship experiences (Boyd & Vozikis, 1994; Cruz, Escudero, Barahona & Leitao, 2009; Ahmad, 2013; Ismail & Ahmad, 2013). There also exist arguments to the effect that exposure of individuals to entrepreneurship in the earlier stages of life enhances their of engaging in some variant of entrepreneurial activity in the later stages of life (Keat et al., 2011; Gerba, 2012; Laspita et al., 2012). The above suggestion follows real-life observations of a high incidence of entrepreneurial activity

amongst individuals whose parents have been self-employed or whose families own and manage a business enterprise (Henley, 2007; Altinay, Madanoglu, Daniele & Lashley, 2012). Thus, the existence of prominent proximal role models plays a critical role in the moulding of young people's entrepreneurship intentions.

A recent survey of 355 final-year Commerce students at two rural South African universities by Malebana and Swanepoel (2014) revealed that there were significant differences in entrepreneurial self-efficacy levels (a key determinant of entrepreneurship intention) amongst participating students on the basis of some demographic factors such as gender, family background, previous work experience, having friends who are entrepreneurs and having previous exposure to entrepreneurship. Although the research revealed that there were significant differences in self-efficacy levels amongst participating students on the basis of demographics (previous work and entrepreneurship experience), the overall conclusion is that the differences had an insignificant effect on the entrepreneurial self-efficacy of the respondents. These findings seem to corroborate suggestions by Autio et al. (2001) that entrepreneurship research exploring the predictive power of demographic factors no longer add any value. Also, Liñán (2004) comments that the predictive and explanatory power of demographical factors is insignificant as far as entrepreneurship behaviour are concerned. However, that does not necessarily disregard the potential influence of demographic factors on the relationship between entrepreneurship intention and its antecedents. Weber (2012) makes a compelling argument on the need not to ignore personal traits and demographic factors in encouraging entrepreneurial behaviour. Adopting a resource-based view, he contends that given budgets constraints in funding entrepreneurship education, the focus must be on those individuals who already possess entrepreneurial traits and will be presumably more receptive to entrepreneurship education. Thus, the current study included demographic factors as control factors in the proposed relationship between the independent variables (entrepreneurship education and technology creativity) and the dependent variable (entrepreneurship intention).

5.5.2 Trait-based factors

Some argue that the possession of certain individual personality features enables some people to show an inclination towards entrepreneurship activity when compared to those who do not have such characteristics. The often cited features comprise; desire for achievement (McClelland, 1961); locus of control (Rotter, 1966); risk-taking propensity (Brockhaus, 1980); proactiveness (Miller, 1983), tolerance for ambiguity (Betaman & Grant, 1993) and creativity (Drucker, 1985). Gibbs (2005) in Stokes, Wilson and Mador (2010:17) proposes these personality and value traits:

- Strong sense of independence,
- Distrust of bureaucracy and its values,
- Self-made/self-belief,
- Strong sense of ownership,
- Belief that rewards come with own effort,
- Hard work brings rewards,
- Belief can make things happen,
- Strong action orientation,
- Belief in informal arrangements,
- Strong belief in the value of know-how and trust,
- Strong belief in freedom to take action,
- Belief in the individual and community, not the state.

The current study recognises some of the above traits as potentially influencing entrepreneurship intention. These are summarised into three main categories, which are risk-taking propensity, need for achievement and locus of control and included in the conceptual model as controlled variables. Kuratko (2014) dismisses the portrayal of entrepreneurs fitting a particular profile as a myth on the basis of incompleteness and lack of a valid set of traits. He argues that the abundant profiles of the prototype entrepreneur in extant literature are based predominantly on case studies and achievement-oriented individuals and therefore their generalisability is questionable. Instead, he sees entrepreneurs as possessing a certain frame of mind as compared to possessing certain personality traits. Apart from the above, Liñán (2004) also raises

questions about the predictive ability of personality traits citing methodological and conceptual flaws in past empirical studies.

The creativity factor is one significant psychological aspect of entrepreneurship intention that has received very limited research attention. Creativity, taken as the ability to generate new and useful ideas (Amabile, 1996), is acknowledged as forming a key part of the entrepreneurship process and behaviour. In the last decade, two pioneer studies connecting creativity and entrepreneurship intention were undertaken in the European context (Hamidi et al., 2008; Zampetakis et al., 2011). Both studies confirmed a positive correlation between students' creativity levels and the strength of their entrepreneurship intentions. Though the studies are explorative of this linkage and indicate a positive correlation between the variables, it is ironic that the effect of creative minds has been ignored in intention-based theories of entrepreneurship. To strengthen the case for the consideration of creativity in entrepreneurship intention theory, this study incorporated technological creativity in the Theory of Planned Behaviour as a potential influencing factor on the formation of entrepreneurship intention.

5.5.3 Education

Education plays an important role in everyday life and national economies through impartation of knowledge, skills and competencies, (Ao & Liu, 2014). In addition, Wu and Wu (2008) postulate that exposure to general education enhances one's entrepreneurial capabilities. While literature confirms no causative relationship between general educational levels and entrepreneurship intentions of students, the qualification level that a person possesses has been noted to have an influence on one's success as an entrepreneur (Acs & Armington, 2004; Matlay, 2006; Raposo & Do Paço, 2011). For instance, it is observed that entrepreneurs with university degrees are more successful as compared to non-graduates (Levie, Hart & Anyadike-Danes, 2009). Empirical evidence from the developed world suggests that degree-holders invest more in their business ventures and create more jobs (Åstebro, Bazzazian & Braguinsky, 2012; Martínez, Mora & Vila, 2007). However, there is no absolute theory to explain how education levels impact on people's intention to engage in

entrepreneurial careers. As such, an attempt to connect entrepreneurship education to the Theory of Planned Behaviour is made in this study. There are suggestions that more knowledgeable and educated individuals are more inclined to discern entrepreneurial openings as attractive and enough to prompt initiation of the new businesses set up processes (Shane & Venkataraman, 2000). The same authors also point out that educated are less risk averse because they are confident that if they fail as entrepreneurs they can always re-join the labour market. However, there is no evidence to suggest that those with postgraduate degrees are more entrepreneurial than those with undergraduate degrees.

It is the relationship between exposure to entrepreneurship education and entrepreneurship intentions that reveal interesting connections. Current outcomes from impact studies paint an unsettled and sometimes inconsistent picture of the effect of entrepreneurship education and training on entrepreneurial intentions (Escudero, Barahona & Leitao, 2009; Olomi & Sinyamule, 2009; Bakotic & Kruzic, 2010; Hill, 2011; Mwasalwiba, 2012). The above-cited studies utilised assorted models and methodologies. The dissimilar findings reported in these studies can be attributed to the varying entrepreneurship education programmes involved, some which were voluntary and others obligatory. It is worth noting that the studies that discovered a negative association between entrepreneurship education programme and entrepreneurship intent of graduates were done on students in compulsory entrepreneurship education programmes and incorporated disposed and unenthusiastic entrepreneurship students (Oosterbeek et al., 2010; Singh & Verma, 2010; Von Graevenitz et al., 2010). Such programmes can be equated with the compulsory and year-long entrepreneurship skills development (ESD) subject offered at all Zimbabwean polytechnics. However, the question on the definite impact of entrepreneurship education has not been conclusively answered here, hence this study took a cross national approach to explore if entrepreneurship education at selected Zimbabwean and South African tertiary education institutions is achieving its set goals of instilling entrepreneurial intentions.

5.5.4 Contextual factors

The entrepreneurial intentions of students, as evidenced by the desire to be self-employed, fluctuate significantly across tertiary education institutions and geographic regions (Liñán, Urbano & Guerrero, 2010; Kibler, 2013). According to Walter and Dohse (2012), some regional contexts are permissive of entrepreneurial knowledge entrenchment, with such circumstances allowing for the entrenchment of students' intentions towards entrepreneurial careers (Peterman & Kennedy, 2003; Souitaris, Zerbini & Al-Laham, 2007). This suggests that students' entrepreneurship intentions are subject to the interaction between an individual and his/her context.

There are suggestions that the place where entrepreneurship is taught and learnt may affect the success of such programmes. Based on a field study in Germany, Walter and Dohse (2012) found that lively modes of education are, irrespective of the regional context, positively correlated to self-employment intentions, while passive modes raise self-employment intentions only in regions with already high levels of entrepreneurship. Linan et al. (2011) also noted regional variations in entrepreneurial levels of students from the two Spanish cities of Catalonia and Andalusia. Entrepreneurship was perceived in high regard in Catalonia, a city in a developed region than in the less developed Andalusia. This had the effect of positively influencing perceived subjective norms and behavioural control in Catalonia. In lesser developed Andalusia, the perception of the value of entrepreneurs affected the respondents' attitudes and subjective norms towards entrepreneurship. The pattern of responses resonates with Davidsson and Wiklund's (1996) assertion that existing cultural disparities may, in addition to operational factors, be a potent root of cross-regional or cross-national variation in developing nascent entrepreneurs. Hence, these findings reflect the need to promote more positive entrepreneurial tenets in comparatively retrograde regions.

The above-noted acknowledgement of the association between regional context, entrepreneurial education and entrepreneurship intentions of student, shows that region-based research which examines the association between entrepreneurship education and entrepreneurship intention are needed in order to deepen

understanding of this relationship. As such, this study addresses this research gap by focusing on two tertiary education institutions in South Africa and Zimbabwe as the context of study.

5.6 ENTREPRENEURSHIP INTENTIONS AND ENTREPRENEURSHIP ACTIVITY

Some scholars posit that entrepreneurship intention plays a substantial role in the new venture creation process (Zampetakis et al., 2011; Uddin & Bose, 2012). They equate entrepreneurship intention to one's deliberate will to start a new business, a process otherwise known as new venture creation. It is significant to note, from this perspective that, coming up with a new business venture is not a random, serendipitous event but a consequence of deliberate entrepreneurship behaviour stemming from one's psychological readiness to act entrepreneurially. To clarify the relevance of intentions to the new venture creation process, one can analyse the following about the entrepreneur by Kuratko (2008:4).

“Today, an entrepreneur is an innovator or developer who recognizes and seizes opportunities; converts those opportunities into workable/marketable ideas; adds value through time, effort, money, or skills; assumes the risks of the competitive marketplace to implement these ideas, and realizes the rewards from these efforts” (Kuratko, 2008:4).

The above exposition underscores the act of recognising or creating business opportunities and mobilising resources to exploit the opportunities as arising from a deliberate planning on the part of entrepreneurs. Hence, the entrepreneurship process begins and is driven by a desired outcome and an intention to engage in associated activity.

The explanation of the connection between entrepreneurship intention and entrepreneurship activity gels with Bygrave's (2009) modelling of the entrepreneurship process which is illustrated in Figure 5.4.

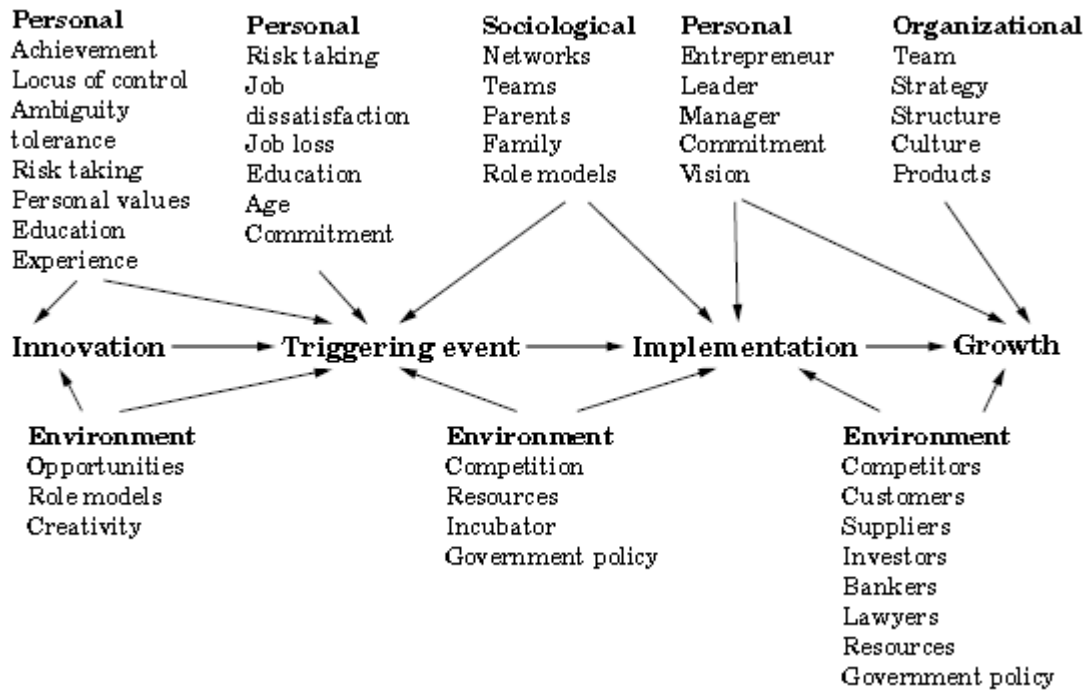


Figure 5.4 Linking intention to the entrepreneurship process

Source: Bygrave (2009)

This model suggests that entrepreneurship opportunities are spotted in the business environment and the entrepreneur will, through creativity, come up with products/services that fill the gap in the market. All this requires conscious efforts to co-ordinate and control the use of resources, adapt to change and engage in active risk management. Evidently, engaging in entrepreneurial process is not a knee jerk reaction to internal or external stimuli but a conscious effort to commit oneself to the process (Venesaar, Kallaste & Küttim, 2014). Therefore, one first engages in a mental evaluation process whose culmination is a deliberate will to commit oneself to starting a new venture. The inference is that individuals cannot commit themselves to engaging in entrepreneurial activity without an intention to do so (Fini et al., 2009). Entrepreneurship intention is thus a proxy for a future course of action, that is, the desire to create a new business venture soon. Whether one will eventually bring such intention to fruition is subject to other factors within or outside the control of the concerned individual. Despite the fact that there is latitude for behaviour to emanate from unconscious and unintended antecedents, what relates to this study is a

conscious and intended behaviour to establish a new business enterprise. In as much as a flash of inspiration or a trigger event may set off business ideas, a stable will to engage in business is required for sustained attention and implementation of that idea (Bird, 1988).

5.7 REGIONAL PERSPECTIVES ON ENTREPRENEURSHIP INTENTIONS

The previous section showed how entrepreneurship intentions, at any point in time, are subject to the influence of several factors. It also emerged that people in diverse geographical contexts exhibit varying levels of entrepreneurship intentions because of the influence of different contextual factors. The following subsections are devoted to analysing entrepreneurship intentions in different contexts across the world.

5.7.1 USA

Autio, Keeley, Klofsten, Parker and Hay's (2001) cross-national comparative study on the entrepreneurial intentions of students in the USA and the Scandinavia (Finland & Sweden) showed a higher inclination towards entrepreneurship by the USA towards a corporate or entrepreneurship career when compared to self-employment. The USA sample which comprised of Stanford University and the University of Colorado (Colorado Springs), had the oldest respondents with an average age of 29 years, with 82% of the respondents employed either on a part-time or full-time basis. The fact that older and employed students had higher entrepreneurship intention suggests that one's age and employment status have an influence on one's EI. This explains the inclusion of the age and current or previous employment status variables in the conceptual model for the current study. Nonetheless, the USA sample overall showed more EI as compared to other participating nations, thus pointing towards a relatively higher students' entrepreneurial intention in the USA as compared to other advanced economies.

Another study by Kelley et al. (2010) showed that Americans were thrice more entrepreneurial as compared to Europeans. This view is confirmed in later studies which show that even though entrepreneurship activity and intention are relatively lower amongst advanced economies as compared to emerging ones, the USA scores

better than several advanced economy nations on entrepreneurship intention (Singer et al., 2015). However, a GUESS study by Sieger, Fueglistaller and Zellweger (2014) encompassing over 700 universities from 34 countries showed that though the USA citizens were better inclined towards entrepreneurship, as compared to numerous developed countries, its rating was lower than the average entrepreneurship intention index of 3.7, at 3.5. A Grassl and Jones' (2009) study of entrepreneurship intention based on samples of business and non-business students at St. Norbert College, a small Catholic university in the USA showed that intent was on average weak among students from other disciplines but stronger amongst business students. The authors attributed the variations to motivational structures in the business faculty rather than contextual factors. The findings from the study confirm results from other studies that suggest that entrepreneurship intention levels are declining amongst the younger Americans (Gallup Organization, 2007).

5.7.2 EU

Statistics from various sources suggest varying degrees of entrepreneurial intentions amongst countries in the European Union. At the outset, the World Economic Forum (2014) reports that though Europe was conducive to start-up businesses, fewer Europeans compared to the 2009 levels showed a willingness to be self-employed, with a larger proportion of people in the European Union (EU) preferring corporate employment. A survey by Eurobarometer (2012), which provides yearly statistics on entrepreneurial activity among 25 European Union (EU) member states, including Norway, Iceland, and the United States, shows that about 45% of Europeans have never thought of initiating their own business ventures. The unfolding evidence confirms claims by Singer et al. (2014:34) that 'entrepreneurial intentions are the highest among factor-driven economies and the lowest among innovation-driven economies.' This in turn supports the commonly observed pattern that starting an own business is dominant where other options to provide income for a living are limited. The conclusion that can be drawn from this observation is that much of entrepreneurship in factor driven economies could be necessity driven due to the limited economic opportunities available to generate income.

Variations in terms of entrepreneurial intentions and activity levels, however, existed between European countries. The OECD (2009) and Singer et al. (2015) report that citizens in newer EU entrant countries such as Albania, Croatia and Estonia, particularly those from the continent's southern parts, reported significantly higher intentions to be self-employed as compared to those in other parts. As far as students' entrepreneurship intentions are concerned, the Sieger, Fueglistaller and Zellweger (2014) study shows that the entrepreneurship intentions of students from developed countries like Austria, Switzerland, and Germany were much lower than those from the developing world. This may be a result of an abundance of rewarding formal employment opportunities for the countries' citizens, which leaves only a few with a predisposition for opportunity-driven entrepreneurship to engage in entrepreneurship activity. However, the authors of the report argue that the rate is high enough for a developed economy context.

5.7.3 Latin America

Sieger et al.'s (2014) study revealed that tertiary education students in Latin America exhibit predominantly high rates of entrepreneurship intention. South American countries like Argentina, Mexico and Columbia scored high with over 50% of the participants in the study indicating their intention to establish a business within five years of completing their studies. Álvarez, Urbano and Amorós (2014) corroborate this finding by demonstrating that Latin America and Caribbean countries only rate behind African countries in terms of entrepreneurship intention of adults between the age of 16 and 64 years, even though much of the African entrepreneurship is replicative.

Notwithstanding the said levels of entrepreneurship intention, some studies show that the proportion of youth entrepreneurs in Latin America is relatively lower. For instance, Llisterri, Kanti, Angelelli and Tejerina's (2006) household enterprise survey in 14 Latin America countries revealed that although the majority of youths who participated were self-employed, they constituted a smaller number of the total entrepreneurs in the participating countries. The findings also showed that most of the young entrepreneurs were lowly educated, from poor families and their businesses usually had low economic impact and growth potential. The findings are supported by Lederman,

Messina, Pienknagura and Rigolini's (2013) observation that entrepreneurs in Latin America generally create many business ventures which, however, lack innovation. One may imply that perhaps the relatively higher levels of entrepreneurship intention in the context are due to the paucity of alternative sources of livelihood and are therefore driven by the need to generate income for subsistence. Such views can be extrapolated to the situation of other youths in different geographical contexts who are facing similar deprived circumstances.

5.7.4 Asia

While entrepreneurship activity is important for an economic set-up, citizens of Asian countries show varying intentions towards entrepreneurship. The more developed nations, such as Singapore, Japan and Malaysia show a relatively lower affinity for entrepreneurship as compared to the poorer nations. This may be due to the high status associated with professional jobs and fear of both the unknown and of loss of reputation upon business failure. In addition, the living standards are already high in the stronger Asian economies, thus there is no perceived need for entrepreneurship for the population. On average, however, the 2014 GEM Global Report shows that Asia and Oceania lag behind Africa and Latin America but is better than North America and Europe in terms of the entrepreneurship intention of the adult population aged between 18 and 64 years (Singer et al., 2015).

5.7.5 South Africa

South Africa is on record for having low entrepreneurship intentions amongst its citizens (Herrington & Kew, 2016). Herrington and Kelley's (2012) findings state that while numerous countries in Sub-Saharan Africa have high entrepreneurship intention rates, South Africa scores disturbingly low amongst participating nations with only 12% of the adult population showing an intention to engage in entrepreneurship soon (See Figure 5.5).

Economy	Entrepreneurial intentions: **
Angola	70%
Botswana	72%
Ethiopia	24%
Ghana	60%
Malawi	70%
Namibia	45%
Nigeria	44%
South Africa	12%
Uganda	79%
Zambia	55%
Sub-Saharan Africa Average (unweighted)	53%

Figure 5.5 Rate of entrepreneurship intention in sub-Saharan countries

Source: Herrington and Kelley (2012)

The statistics on Figure 5.5 are ironic when considering the amount of resources that are committed towards entrepreneurship promotion by the SA government. This raises the important question whether the correct actions are being implemented in the entrepreneurship promotion drive. For instance, the affirmative economic policy of Broad-Based Black Economic Empowerment (BBBEE) as a way to promote entrepreneurship among Black South Africans is often criticised for favouring politically connected entrepreneurs who specialise in securing tenders and are not productive. The countries low TEA (Total Entrepreneurial Activity), evidenced by the low scores on various forms of entrepreneurship amongst participating countries (See Figure 5.6), bear testimony to Ajzen’s (1991, 2015) view that entrepreneurship intention predates any entrepreneurship behaviour.

Furthermore, a study of entrepreneurship intentions among nine SA universities confirmed the low level of entrepreneurship intentions among university students (Scheepers, Solomon and de Vries, 2011). This finding has resonance with other studies that underscore the generally low level of entrepreneurship intentions amongst South African citizens (Herrington & Kelley, 2012; Naong, 2012).

Economy	Nascent entrepreneurship rate	New business ownership rate	Early-stage entrepreneurial activity (TEA)	Established business ownership rate	Discontinuation of businesses	Necessity-driven (% of TEA)	Improvement-driven opportunity (% of TEA)
Angola	15%	19%	32%	9%	26%	24%	38%
Botswana	17%	12%	28%	6%	16%	33%	48%
Ethiopia	6%	9%	15%	10%	3%	20%	69%
Ghana	15%	23%	37%	38%	16%	28%	51%
Malawi	18%	20%	36%	11%	29%	42%	43%
Namibia	11%	7%	18%	3%	12%	37%	37%
Nigeria	22%	14%	35%	16%	8%	35%	53%
South Africa	4%	3%	7%	2%	5%	32%	40%
Uganda	10%	28%	36%	31%	26%	46%	42%
Zambia	27%	15%	41%	4%	20%	32%	46%
Sub-Saharan Africa Average (unweighted)	15%	15%	28%	13%	16%	33%	47%

Figure 5.6 Rates of entrepreneurship activity in sub-Saharan countries

Source: Herrington and Kelley (2012)

5.7.6 Zimbabwe

There is not much empirical evidence from research that suggests that solid generalisable findings on entrepreneurial intentions of tertiary education students exist in Zimbabwe. Literature search reveals that only three studies on entrepreneurship intentions of tertiary level students have been undertaken (Hosho et al., 2013; Mudondo, 2014; Dabale & Masase, 2014). Mudondo (2014) examined the attitudes and intentions towards entrepreneurial careers of 300 purposely sampled students from the Faculty of Commerce at Great Zimbabwe University. The results revealed that the majority of students had a positive image and attitude towards entrepreneurship and most indicated their desire to pursue entrepreneurial careers. Notably, the participants had partaken in entrepreneurship education, and it was assumed that the heightened interest and awareness in entrepreneurship was somewhat related to this. The generalisation of the findings to the general tertiary education student population is problematic in several ways. First, the study sample was confined to students in the Commerce Faculty and excluded students from other disciplines who might have expressed different views. Second, the study used a non-probability based approach to sampling which makes findings based on such a sample

not generalisable to the population studied. In the final analysis, Fayolle and Liñán (2014) raised an issue about the lack of methodological rigour because of the absence of a control group in most studies on entrepreneurship intention. Such groups are difficult to create and monitor in natural settings. This study, therefore, exhibited a similar flaw though its findings are valuable in so far as it forms part of pioneer studies on the theme on entrepreneurship intention in the Zimbabwean higher education context.

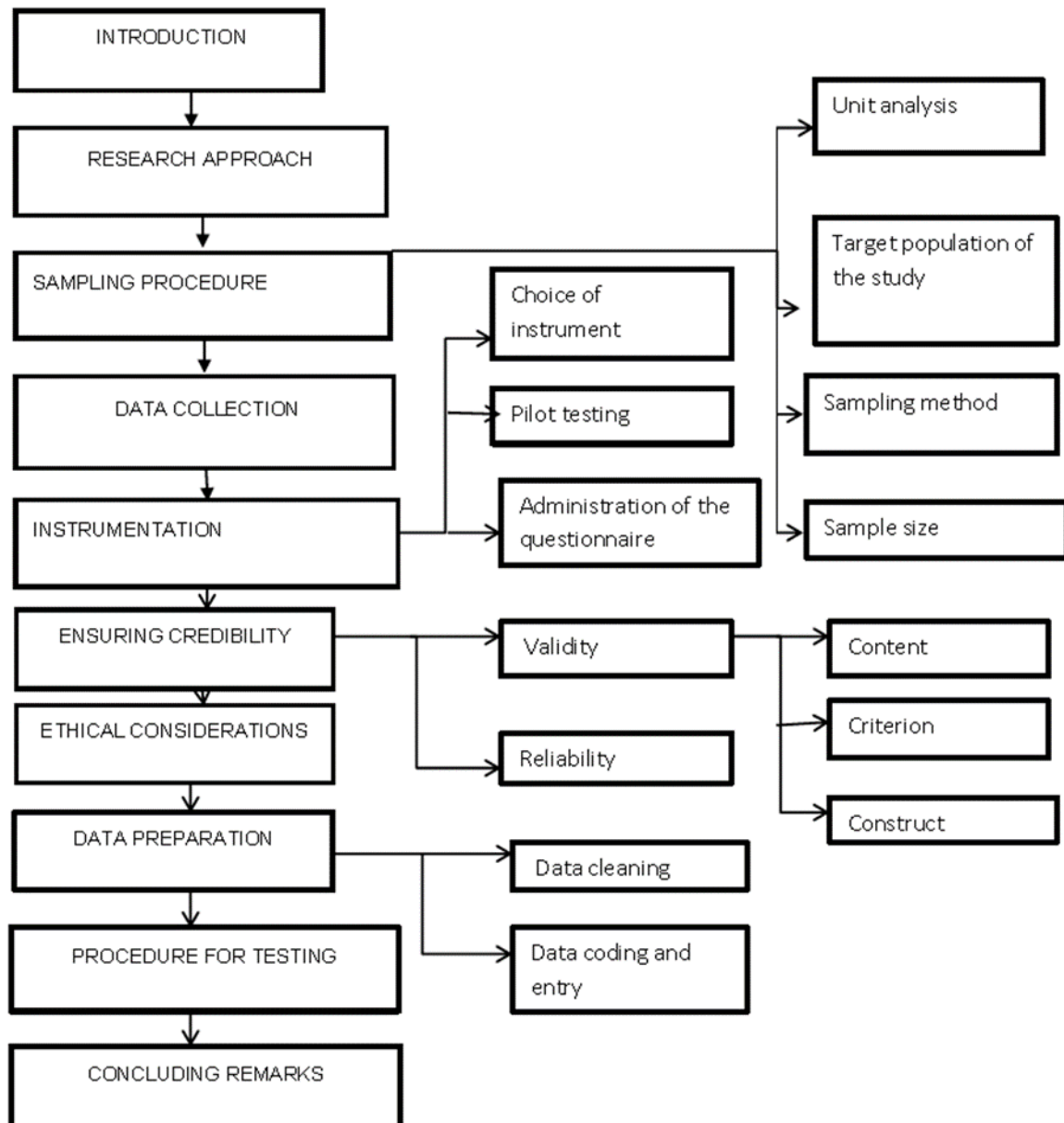
A study on undergraduate alumni from the Faculty of Management and Administration (FMA) who took an elective course in Entrepreneurship and Small Business Management in their final year of study at Africa University (Zimbabwe) showed a positive attitude and intention towards an entrepreneurship career, thus suggesting the positive effect of entrepreneurship education (Dabale & Masase, 2014). The study, however, had several limitations which undercut the generalisability of the findings. First, the participants were alumni who graduated three years prior to the study which made them subject to the effects of maturation. Between the graduation period and time of the study, the respondents could have been exposed to some influence that swayed them towards entrepreneurship (Weber 2012). Another weakness lies in the use of a relatively small sample that was selected on the basis of convenience and thus compromised the generalisability of results to the entire group of alumni. The study, however, had the strength of including a comparison group as part of the research. In contrast to the preceding studies, Hosho et al.'s (2013) study on students from the School of Business at the Chinhoyi University of Technology revealed that students who had undergone entrepreneurship education developed negative attitudes and intention towards entrepreneurship. Though this study involved students from an institution with a technological education inclination, it excluded students outside the business faculty, thus, denying the study of potentially rich findings. This study also did not make use of comparison groups, the inclusion of which would enhance the validity of the findings.

The above review shows an inconclusive picture on the status of entrepreneurship intentions of tertiary education students in Zimbabwe. Hence, there is a need to undertake more methodologically robust studies, including diverse respondents.

5.8 SUMMARY

This chapter addressed the concept of entrepreneurship intention, which is the dependent variable in this study. The literature review showed that pursuing entrepreneurship intention as a research variable is a legitimate exercise which still needs further research. However, use of intention-based theories in entrepreneurship research has grown in the past decade. While the extant literature suggests a close connection between entrepreneurship intention, its antecedents and entrepreneurial activity of nascent entrepreneurs, the relationships still need further probing in different contexts while using more robust methodologies. In addition, the influence of various endogenous and exogenous on entrepreneurship intention still needs further probing so as to ascertain those factors that exert the greatest influence. This is critical in an era where entrepreneurship, more so of the innovative type, has been accorded a key role in solving the socio-economic ills of communities across the globe. This study adopted Ajzen's Theory of Planned Behaviour with express intent of ascertaining the influence of entrepreneurship education (EE) and technology creativity (TC) of selected tertiary education students, whilst controlling for the influence of personal and demographic factors. Furthermore, it there is need to empirically probe entrepreneurship intentions in different scenarios i.e. corporate entrepreneurship intention social entrepreneurship intention, academic entrepreneurship intention and family entrepreneurship intention. The next chapter addresses the research methodology used in the current study.

CHAPTER 6: RESEARCH METHODOLOGY



6.1 INTRODUCTION

The preceding four chapters addressed the literature relating to the research variables which are the subject of this study. Hence, the chapters were arranged according to the three key variables constituting the research question, which are entrepreneurship education, technological creativity and entrepreneurship intentions. This chapter outlines the methodology adopted in this study. The underlying research approach, philosophy, design, target population, data collection procedure and data analysis techniques are addressed. Ethical concerns and matters relating to validity and reliability are also considered. In essence, the chapter documents the procedure which was followed in order to satisfy the study's research objectives.

6.2 EPISTEMOLOGY

Epistemology relates to the nature and limits of knowledge about reality and how it can be validly acquired (Saunders, Lewis & Thornhill, 2009). This study drew on the positivist worldview, which assumes that there exists a single universal reality in the form of variables and their linkages that can be reliably and validly measured by empirical means (Biggam, 2008; Saunders, Lewis & Thornhill, 2014). Thus, a positivist philosophy is appropriate where a study is based on a pre-conceived conceptual model with clearly defined associations between the constructs that can be validated through accurate quantitative measurements. Since the current study was guided by a conceptual model of hypothesised relationships formulated using the Theory of Planned Behaviour and other related literature on entrepreneurship intentions, the positivist approach was thus deemed appropriate.

6.3 RESEARCH APPROACH

A quantitative research approach was used in this study to address the research objectives. A quantitative research is a strategic approach for conducting an investigation that adheres to scientific methods and follows definite steps 'from observable evidence to accurate predictions' (McNabb, 2013:10). The process encompasses formulation of the hypotheses, observation, data gathering, testing of hypothesis and confirmation or rejection of the hypothesis. The purpose of engaging

such a research approach is to enable the establishment of precise inferences from the sample data to the target population (Nenty, 2009). The approach is characterised by figures and statistics relating to the population of the sample (Muijs, 2011). Thus, objectivity is the guiding rule, with the researcher's duty being to observe and measure variables of interest and taking care to avoid the contamination of data through interaction with respondents (Thomas, 2003).

According to Cresswell (2003:18), quantitative research studies are concerned with 'cause and effect linking, hypotheses, use of measurement and observation, and the test of theories.' The approach was preferred because of the thrust of the current study which was to ascertain the status of selected students' technological creativity and their perceptions on entrepreneurship education and how these possibly impacted on the direct determinants of entrepreneurship intention, and on actual entrepreneurship intention of the same students. Hence, quantitative research techniques enabled the testing of associative and predictive relationships between independent variables and dependent variables. The approach was deemed appropriate for gathering precise self-reported data required to meet the research aim due to its facility for using numbers to describe the occurrence, frequency and distribution of phenomena like attitudes, perceptions or intentions (Morgan & Sklar, 2012).

6.4 RESEARCH DESIGN

This study employed a cross-sectional survey research design. Such a design seeks to gather data from a single point in time as opposed to two or more times (Punch, 2003, 2013). According to Privitera (2014:226), a survey research design relates to 'the use of a series of questions or statements presented orally or in written form to characterise an individual or group.' Usually, the information sought relates to issues such as respondents' attitudes, beliefs, emotions and perceptions.

Respondents for the current study were selected from students who had completed or were about to complete introductory courses in entrepreneurship at particular institutions of higher learning, i.e. Kwekwe Polytechnic (Zimbabwe) and the Central University of Technology (South Africa). These were surveyed once using self-

completion questionnaires. Given the large size of the target population, the survey technique was deemed appropriate since it facilitates the gathering of views from dispersed subjects in relatively short time and at a lesser cost (Biggam, 2008; Saunders et al., 2009). In addition, findings from surveys are generalisable to populations and claims based on findings from surveys are supported by vast empirical data (Biggam, 2008). Lastly, Cohen, Manion and Morrison (2007) proffer that survey data can also serve a confirmatory purpose. In other words, it can be used for testing models, theories and causal relationships. In this case, the survey design was deemed suitable for this study and the data derived by such means was used to validate the proposed conceptual model of entrepreneurial intentions.

6.5 SAMPLING PROCEDURE

This section describes the sampling issues that were considered in the current study. It encompasses the unit of analysis, target population, sampling method and sample size details, which are dealt with in detail in the following subsection.

6.5.1 Unit of analysis

Unit of analysis are observations for which independent and dependent variables are measured (Courgeau, 2003). According to Rubin and Babbie (2016:163), they are ‘those things that we examine in order to create summaries and explain the differences among them.’ In social research, such units can be individuals, objects or groupings. Selected students who had undergone introductory courses to the study of entrepreneurship at Kwekwe Polytechnic and in the Department of Business Support Studies at CUT were the units of analysis and respondents in this study. The logic behind having individual students as the unit of analysis was to ascertain how the individuals differed on the constructs under study, namely perception of entrepreneurship education, technological creativity, attitudes towards entrepreneurship, perceived behavioural control, entrepreneurship intentions, need for achievement, locus of control and risk-taking propensity, and how those disparities were interlinked across constructs (Punch, 2003).

6.5.2 Target population of the study

Population, also known as the target population, relates to the entire set of research subjects that a researcher intends to study (Johnson & Christensen, 2010). It is from this group that the respondents of a study are sampled. The target population possesses all the variables that are of interest to the research problem (Hair, 2015). It is to this group that the findings of a research study will be generalised. The study targeted students who had completed or were about to complete introductory courses in Entrepreneurship at the Kwekwe Polytechnic (Zimbabwe) and the Central University of Technology (South Africa). Given that the purpose of the research was not to establish the actual entrepreneurial behaviour of respondents but rather entrepreneurship intentions, practising entrepreneurs were not appropriate candidates for this study. Instead, students who were being groomed for both entrepreneurship and corporate careers amidst disturbing levels of unemployment in Zimbabwe and South Africa were ideal for such a study. Hence, college students exposed to entrepreneurship education at their respective institutions of higher learning were targeted for this study.

The population from the Kwekwe Polytechnic comprised students from different fields of study that included Engineering, Business, Humanities, Creative Arts and Applied Sciences who had participated in an entrepreneurial course. An exploratory study of past enrolment records revealed that over 400 students per intake enrolled for the introductory course at the Kwekwe Polytechnic only. At the same time, the researcher's conversations with lecturers of the introductory entrepreneurship course at the CUT (Bloemfontein) revealed that enrolment figures for the course averaged 250 students per intake. These statistics provided reference points when the sampling of the respondents was undertaken. This target group possibly included entrepreneurially oriented and non-oriented students alike. At the same time, the same group comprised individuals of varying technological creativity levels. The two groups were ideal candidates for assessing whether technological creativity levels and exposure to entrepreneurship education impacted one's entrepreneurship intent.

6.5.3 Sampling method

Sampling refers to 'the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population' (Leedy & Ormrod, 2010:190). This is necessitated by the prohibitive cost, time and other resource challenges associated with undertaking a full-scale study of the entire population (Cohen et al., 2009; Saunders et al., 2009; Leedy & Ormrod, 2010). According to Johnson and Christensen (2010), the sampling process must be done in a way that the sample derived is representative and data derived from such a sample is accurately generalisable to the entire population.

Due to logistical constraints, time limitations and associated costs of the study, it was impossible to involve the entire target population in the current study. As a result, a representative sample of the target population was selected as a proxy for the target population. The sample was selected using the probabilistic, simple random sampling technique. This is a sampling method where every element in the target population stands a chance of being considered as part of the sample. To perform the sampling procedure, class lists of students who had done and/ or were about to complete the introductory entrepreneurship course were accessed from the relevant lecturers at the particular institutions in Zimbabwe and South Africa. The name lists were then numbered consecutively to create a sampling frame. A sampling frame is the actual list of elements constituting the target population. It is from the sampling frame that the actual sample was extracted. According to Weisberg (2009), a sampling frame should be of appropriate composition to enable a representative sample to be extracted.

Using an online random number generator that utilises statistical algorithm to produce random numbers, sample elements were selected until the desired size was derived. The technique is free from sampling bias and thus enhanced the representativeness of the sample (Cohen et al., 2007). This is critical for the study given the need to generalise the findings and make accurate inferences to the target population.

6.5.4 The sample size

Sample size refers to the number of elements included in a sample (Saunders et al., 2009). Determining the appropriate sample size is a challenging exercise given the many factors such as cost, time frame, the size of the target population and the degree of accuracy required that need to be considered (Hair, 2010). According to Cohen et al., (2007:101), ‘...The correct sample size depends on the purpose of the study and the nature of the population under scrutiny.’ The larger the sample size, the higher the chances that it is normally distributed, making it suitable for diverse statistical analyses (Saunders et al., 2009). This is known as the law of large numbers. Settling for a particular sample size often involves counter-balancing convenience of gathering data and the margin of error. In quantitative studies, sample size formulae are often invoked, but these often result in impossible sample sizes, especially when dealing with large sample populations (Hair, 2010). A suggested rule of thumb is to use a minimum sample size of 30 (Saunders et al., 2009; Hair, 2010). At that size, the distribution of the dataset around mean would most likely be close to normal (Cohen et al., 2007; Saunders et al., 2009). If the data-set is not normally distributed, non-generalisable results are likely to be derived from it. Considering the foregoing exposition, the actual sample size for this study was then decided using statistical tables for determining sample size (see Table 6.1) developed by Strydom and De Vos (2005).

Table 6.1 Procedures for the selection of a sample size

Population	Percentage suggested	No. of respondents
20	100 %	20
30	80 %	24
50	64 %	32
100	45 %	45
200	32 %	64
500	20 %	100
1000	14 %	140
10 000	4.5 %	450
100 000	2 %	2000
200 000	1 %	2000

Source: Strydom and De Vos (2005)

Based on Table 6.1, a sample size of 140 elements could have produced generalisable findings for the current study given that the estimated total number of students in the accessible target population at the two participating institutions was less than 1000. However, to improve the representativeness of the selected samples and to mitigate the possible effects of non-response, larger sample sizes of 200 respondents from each participating institution were settled for. The researcher thus sampled a total of 400 respondents from the two participating institutions.

6.6 DATA COLLECTION

The choice of a data collection method is dependent upon the type of data which one seeks to elicit to address the research problem. Blumberg, Cooper and Schindler (2008) identify two main methods of gathering data and these are the observation of conditions, behaviour, people and processes; or interaction with people concerning their attitudes, motivation, intentions and expectations. The communication approach, specifically survey, was used in this study given the purpose of the study, which was to ascertain respondents' perception of the entrepreneurship education they were exposed to and their technological creativity levels on their entrepreneurial intentions. The researcher solicited responses from the target audience using self-completion questionnaires. These were administered by the researcher, in the Zimbabwean context, and by research assistants in the South African context.

6.7 INSTRUMENTATION

6.7.1 Choice of instrument

The purpose of this study was to elicit valid and standardised responses on technological creativity levels, perceptions of entrepreneurship education, and entrepreneurship intentions of the target population and other factors of interest. In addition, a high response rate from the large sample of respondents was required to facilitate generalisation of results to the target population. Hence, a structured questionnaire was deemed appropriate in this regard because of its ability to gather large quantities of data in a short time from a wide geographic area at lesser cost when compared to other data gathering means such as observation and interviews (Cohen

et al., 2007, Cooper & Schindler, 2009; Saunders et al., 2009). Close-ended questions were also used in the research instrument to enhance response rate (Leedy & Ormrod, 2010).

The data collection instrument used in this study comprised sections on background information (age, gender, course of study, educational background, past employment and entrepreneurship exposure) about the participating students; entrepreneurship intention, entrepreneurial attitudes, subjective norms, perceived behavioural control, perception of entrepreneurship education, technological creativity, locus of control, risk propensity and need for achievement. The other sections of the instrument, subsequent to the background items, were designed in the Likert-scale format. This design made data coding convenient and also had an effect on the choice of data analysis technique to be used.

The questionnaire comprised eight sections (A-H) and a copy is attached as part of the appendices. Section A of the questionnaire comprised elements requiring respondents to provide demographic data such as country of origin, gender, age, marital status, highest qualification, current field of study, previous employment and entrepreneurship experience. From section B to H, the Likert-type scale was used to gather data on respondents' perceptions on the variables, entrepreneurship intent, attitude towards entrepreneurship, subjective norms, perceived behavioural control, technological creativity, entrepreneurship education and psychological traits, which were under study. A Likert scale is an ordinal measure of a person's attitude or perception towards a subject of interest (Maree & Pietersen, 2016). Usually, the scale uses ranges of alternative responses indicating a level of agreement or disagreement. In this study, other scales indicating the extent of approval or disapproval with given statements were incorporated. The number of alternative responses per statement was up to a maximum of five. The designed research instrument was proof-read and edited several times by the researcher with the assistance of the supervisor and a statistician who was engaged to assist with the statistical elements of the research process. The following sub-section elaborates on the non-demographic items which comprised the questionnaire.

6.7.1.1 Entrepreneurship intentions

The entrepreneurship intention construct occupied section B of the questionnaire and was measured using Linan and Chen's (2009) scale which has shown satisfactory reliability and validity in previous studies (Liñán, Rodríguez-Cohard & Rueda-Cantuche, 2011; Fretschner & Weber, 2013; Malebana, 2014). The research chose a scale based measure rather than a categorical one basing on the affirmation by Thompson (2009:676) that 'individual entrepreneurial intent is not simply a yes or no question, but a matter of extent ranging from a very low, effectively zero, to a very high degree of personal, conscious conviction and planning to start a new business.' The scale adopted to measure the construct had six questions (B1: 9-14).

6.7.1.2 Attitude towards entrepreneurship

Section C related to the attitude towards entrepreneurship construct, which was adapted using the existing scale developed by Linan and Chen (2009). The learning orientation scale had three subsections each representing the components of the attitude towards entrepreneurship construct. The attitude towards entrepreneurship construct had a total of 10 items made up of subsection C1 (Commitment to an entrepreneurship career choice in the near future) = 3 items, C2 (Commitment to an entrepreneurship career choice in the medium to long term) = 2 items, and C3 (General attitude towards an entrepreneurship career) = 5 items.

6.7.1.3 Subjective norms

Section D addressed the subjective norms variable construct. The construct was measured using an existing scale designed by Linan and Chen (2009). The scale had three subsections with a total of 11 items, each representing subjective norms. Subsection D1 (Valuation of an entrepreneurship career by the local community) = 3 items, D2 (Approval of an entrepreneurship career by the local community) = 3 items, and D3 (Valuation of an entrepreneurship career at country level) = 5 items.

6.7.1.4 Perceived behavioural control

The perceived behavioural control measurement scale was developed in conjunction with existing scales developed by Kolvereid (1996); Autio, Keeley, Klofsten, Parker and Hay (2001); Forbes (2005) and Linan and Chen (2009). The construct was measured under Section E with 16 items incorporated.

6.7.1.5 Entrepreneurship education

The entrepreneurship education construct was addressed in Section F. The measurement scale for the construct was developed after reviewing existing scales by Mwiya (2014) and Linan and Chen (2009). The section had two subsections, namely F1 and F2 which had a total of 13 items. The F1 subsection (perceived impact of entrepreneurship education) = 5 items and F2 (perception of learning approaches) = 8 items.

6.7.1.6 Technological creativity

Section G of the questionnaire addressed the technological creativity construct. Given that this construct is new and has no existing pre-validated measuring scale, the researcher adopted Kruger's (2004) creativity scale and modified it to encompass a technology component. The resultant measuring scale had 12 items covering self-perception of skills in the following areas:

- Problem/challenge/opportunity recognition / definition,
- Idea generation,
- Creative idea analysis and evaluation,
- Idea judgement/critical thinking,
- Solution implementation.

6.7.1.7 Psychological traits

The psychological traits construct occupied section H of the questionnaire and was measured using a scale adapted from the Karimi, Biemars, Maudei, Lans, Chizari and Mulder's (2015) scale. The measuring scale comprised 18 items from the subsections,

namely need for achievement (7 items), the locus of control (5 items) and risk-taking propensity (6 items).

6.7.2 Pilot testing

A pilot study is a trial run of the main study (Blessing & Chakrabarti, 2009). It is undertaken using members of the target population who are not part of the study sample but possess the same attributes. According to Cohen et al. (2007), a pilot study helps to check the clarity of the research instrument items, instructions and layout. At the same time, it seeks to eliminate ambiguities or difficulties in questionnaire wording and check the ease of readability level of the questionnaire for the target audience. The end result is an improved research instrument with enhanced validity, reliability and practicability. Thus, a pilot test is a pre-emptive measure against a possible ineffective actual study.

The instrument was pilot tested in one day on 30 vocational education students undertaking an introductory course to entrepreneurship at Redcliff Training Centre (Zimbabwe), a non-participating institution in the current study. The thrust of the pilot test was to assess readability, the time taken to complete the questionnaire, clarity of questions and layout in order to remove ambiguities. On average, it took 30 minutes for respondents to complete the questionnaire, which the researcher considered a reasonable duration. Since much of the questionnaire content was pretested and confirmed to be reliable in past studies undertaken by other scholars, no major alterations were effected on the instrument, save for those that sought to clarify instructions.

6.7.3 Administration of the questionnaire

The research instrument was administered to respondents using research assistants, with junior lecturers who taught entrepreneurship courses facilitating the process, at the CUT and by the researcher himself at the Kwekwe Polytechnic. This was done after making appointments the lecturers from whose classes or previous classes respondents were to be sourced. The researcher approached the Heads of Departments at Kwekwe to seek approval to include their students in the field study.

At the CUT, approval to conduct the research at the institution was sought from the Institutional Office and it was granted. At the Kwekwe Polytechnic, the researcher personally distributed the questionnaires to the students during the lectures and then collected them from students soon after completion. It took five lectures, with different sets of classes, at the Kwekwe Polytechnic to complete the questionnaire administration process. In addition, it took 30 minutes at most for the respondents to fill in the instrument. At the CUT, research assistants and some lecturers assisted with the questionnaire administration. The whole process of having the questionnaire completed while the researcher waited enhanced the questionnaire return rate compared to if the students had been allowed to take the instrument home for completion. The distribution of the 400 questionnaires was undertaken over a period of six weeks.

6.8 ENSURING CREDIBILITY OF THE STUDY

It is the purpose of every quantitative study to produce authentic results from a credible data gathering process (Leedy & Ormrod, 2010). Thus, there is need to minimise the extent of error and bias within empirical studies. According to Blumberg et al. (2008), this can be done by ensuring the validity and reliability of the measuring tools employed in a particular study. Validity concerns the capacity of the instrument to measure what is intended for measurement and doing it in a way that reduces biases within a research tool itself, which is an ever present source of error. On the other hand, reliability concerns the replicability of results collected using a particular instrument. The next subsection is devoted to how the issues of enhancing validity and reliability were dealt with in the current study.

6.8.1 Validity

Validity is about whether the research instrument used in the data collection process measures what it is meant to measure (Zikmund, Babin, Carr & Griffin, 2012). Hence, the issue at stake is the credibility of the findings gathered using the instrument. In studies relating to human respondents, this is a complex process as one has to deal with abstract constructs like perceptions, attitudes and moods among other issues (Maree & Pietersen, 2016). Blumberg et al. (2008) distinguish between internal

validity, which is about whether the research instrument used in a study measures what it is purported to measure; and external validity which relates to whether the findings gathered using a research instrument can be generalised from the sample to the target population. Therefore, external validity speaks to whether any other researcher who uses the same tool will derive a similar outcome. The latter type of validity thus to a large extent relies on the nature and representativeness of the sample, issues which have been dealt with under the sampling design section. In this sub-section, we thus deal with various forms of internal validity. The common forms of validity include content validity, criterion validity and construct validity.

6.8.1.1 Content validity

Content validity relates to the extent to which an instrument adequately covers areas of a research variable (Cohen et al., 2009). Therefore, content validity depends on the representativeness and relevance of measuring elements to the construct which they are meant to measure. For instance, when an instrument purports to ascertain entrepreneurship intention, the items constituting the measuring tool should comprehensively cover the elements of entrepreneurship intention. In the current study, pre-validated measuring items were used to measure constructs such as entrepreneurship intention, attitude towards entrepreneurship, subjective norms, perceived behavioural control, entrepreneurship education, risk, taking propensity, need for achievement, and locus of control. For technological creativity, an already existing tool which measured general creativity was modified to incorporate technology aspects. Expert opinion was then sought to verify the relevance and appropriateness of the modified elements.

6.8.1.2 Criterion validity

Criterion validity relates to the predictive ability of the items used to measure a variable against a set standard (Blumberg, Cooper & Schindler, 2016). In other words, it relates to the extent to which a measure is associated with some other standard yardstick that is known to indicate the same construct precisely. According to Maree and Pietersen (2016:238), for criterion validity of an instrument to be assessed, the 'existing scores of an existing instrument which is known to measure the same construct should be

available for the same sample of respondents.’ However, no dedicated instrument that relates to the numerous variables in the current study exists for the selected Zimbabwean and SA tertiary education students.

6.8.1.3 Construct validity

According to Collin and Hussey (2013), construct validity refers to how well a set of related items measure a construct(s) which they seek to measure. In evaluating construct validity, both theory and the measuring instrument being used are scrutinised. Maree and Pietersen (2016) recommend the use of statistical analysis techniques, such as item and factor analysis, to assess construct validity. However, this study applied a pre-validated measuring instrument adapted from numerous scholars, but mainly from Linan and Chen (2009), thereby safeguarding construct validity.

6.8.2 Reliability

Reliability refers to freedom from random or unstable error (Saunders et al., 2009). In other words, it relates to the consistency with which a measuring instrument yields a particular result when the entity being measured has not changed. Hence, a reliable research instrument is expected to yield consistent results when used at different times or when administered to a different set of respondents from the same target population. Reliability is a necessary but insufficient element for validity (Leedy & Ormrod, 2010). According to Maree and Pietersen (2016), there are many types of reliability which include test-retest, equivalent form, split half and internal reliabilities. In the current study, the internal consistency of the research instrument was the issue of concern. This is about whether a set of scaled items measure the same construct. Thus, any measure that assesses the degree of this consistently reflects the reliability of a research instrument. The Cronbach’s alpha coefficient is used to measure internal reliability. The possible values of this indicator range from zero to one, with those close to one indicating high reliability and those close to zero reflecting the opposite. The general guidelines for determining the acceptable levels of reliability are: 0.90- excellent reliability; 0.80- good reliability; and 0.70- acceptable reliability. All the

continuous scale variables measured in this study showed good reliability (see Section 7.5.2).

6.9 ETHICAL CONSIDERATIONS

Cohen et al. (2007) define ethical research practices as those activities that protect subjects, use appropriate methods and are based on genuine outcomes. Blumberg et al., (2008) state that the rationale of research should be the production of authentic research processes, and that surveys should be objective as well as meet high standards to ensure the collection of accurate data. As a result, the following ethical research guidelines were adhered to during the course of this study:

6.9.1 Negotiated access to respondents

The researcher approached the concerned parties (the Institution Office at the CUT and Heads of Departments at the Kwekwe Polytechnic) in person and requested for permission to undertake the study. Before doing the study, the research negotiated access to respondents with the lecturers in charge at the Kwekwe Polytechnic and the CUT (Bloemfontein) highlighting the potential benefits of the study to the higher education sector at large. Written ethical approval was granted at the CUT.

6.9.2 Obtaining informed consent from respondents

Respondents were cordially invited to participate in the study without any preconditions being set for participation or non-participation. Respondents also reserved the right to withdraw from the study or from giving responses to any part of the research instrument that they were not comfortable with.

6.9.3 Guaranteeing and upholding confidentiality to respondents

Respondents were assured that whatever information they voluntarily provide during the course of the research study was to be used for the sole purpose of the research study. The researcher upheld this research principle and used the data for the specified purpose only.

6.9.4 Assuring and maintaining privacy of respondents

The private information of respondents such as demographic data was reported in aggregated form to protect the personal identity of research subjects.

6.9.5 Declaring and preserving anonymity of respondents

During the course of the study, respondents were not asked to give their identity particulars such as names and student numbers so as to guarantee their anonymity.

6.10 DATA PREPARATION

6.10.1 Data cleaning

The returned questionnaires were scrutinised for errors which could possibly compromise the data analysis process. Typical challenges encountered included incomplete and even uncompleted questionnaires. The problem was acute with the the CUT questionnaires and explains the relatively lower response rate compared to the Zimbabwean sample. The incomplete questionnaires were excluded from the data analysis altogether. In the end, a total of 284 questionnaires were analysed, representing 71% of all sample respondents of the study.

6.10.2 Data coding and entry

After cleaning the data of errors, it needs to be coded in preparation for analysis and further testing. Data coding refers to a process of grouping or categorising collected data so as to make it easy to understand and analyse (Bryman & Bell, 2015). The coding process is done through assigning symbols or numbers to alternative responses to statements/questions on the questionnaire. The instrument used for data collection in the current study was pre-coded and had the numerical values already assigned to alternative response options. Therefore, there was no need to code the responses after data collection and preparation. Once the data was coded, it was then entered into statistical software SPSS 21 in preparation for analysis.

6.11 PROCEDURE FOR TESTING THE HYPOTHESES

All the data assembled in the current study were analysed using computer statistical software called Statistical Package for Social Sciences 21. At the rudimentary level, the researcher summarised the responses to items on the research instrument using descriptive techniques such as frequencies, measures of central tendency and measures of variation.

The findings from the two samples (Zimbabwe and South Africa) are presented in text, tabular and graphical format in Chapter 6 of this thesis. The Cronbach's alpha coefficient reliability test was conducted on the scale items on the questionnaire to ascertain their internal consistency. The Cronbach's alpha coefficients for the individual composite variables used in the study were above the minimum cut-off standard of 0.7, and thus were deemed of acceptable reliability.

Given that the distribution of the data relating to the variables considered for this study were not normally distributed, non-parametric tests were conducted to determine any significant differences and correlations of the variables. Thus, the Mann-Whitney test was conducted to determine any significant differences in the levels of entrepreneurship intention among Zimbabwean and South African students. In addition, the Spearman's correlation test was used to assess the nature and strength of relationships amongst the numerous pairs of dependent and independent variables scale (technological creativity, entrepreneurship education, attitude towards entrepreneurship, subjective norms, perceived behavioural control, entrepreneurship intention and the psychological control factors). The standard and hierarchical multiple regression analyses were also used to test the hypothesised predictive relationships between the independent variables and the dependent variables. This procedure facilitated the calculation of the regression coefficients for each independent variable to determine their comparative effect on the dependent variable. The use of multiple regression analysis techniques to assess prognostic effects is supported by numerous studies in the literature that seek to determine the factors influencing entrepreneurship intention amongst students (Malebana, 2012, 2014, 2015; Gerba, 2012; Mwasalwiba, 2013; Hattab, 2014).

6.12 SUMMARY

This chapter discussed the research methodology used in this study. The research methodology adhered to the positivist epistemology and drew comparisons between respondents in Zimbabwe and South Africa. The chapter outlined the research approach and design, target population, sampling procedure, the formulation of the research tool, pilot study, and the administration of questionnaires, data collection, ethical considerations and data analysis. Issues relating to the credibility of the questionnaire were also discussed. The next chapter focuses on the empirical findings of the study.

CHAPTER 7: RESEARCH FINDINGS AND DISCUSSION

7.1 INTRODUCTION

The previous chapter presented the research methodology and design of the study. It demonstrated how the research goal of ascertaining whether and how entrepreneurship education (EE) and technological creativity (TC) influenced entrepreneurship intentions (EI) of students at selected tertiary education institutions in Zimbabwe and South Africa was addressed. This chapter, however, presents and discusses the findings from the empirical study of college students at the Kwekwe Polytechnic in Zimbabwe and the Central University of Technology, Free State (Bloemfontein campus) in South Africa. Thus, the chapter outlines the demographic details of the respondents, and presents as well as discuss on inferential statistics used to test the various relationships between variables. Since the preliminary checks on the data collected revealed that the data-sets were not normally distributed, non-parametric tests comprising the Mann-Whitney U test and Spearman's Correlation tests, were conducted on the collected data. In addition, multiple regression analysis was used to assess the predictive ability of the independent variables on the dependent variables.

7.2 RESPONSE RATE

A total of 400 questionnaires (200 per country) were distributed to respondents in Zimbabwe and South Africa. Of these, 154 were fully completed and returned by the Zimbabwean respondents while 130 were received from the South Africa counterparts. Thus, a total of 284 questionnaires were analysed. This denotes 77% and 65% response rates for the Zimbabwean and South Africa samples respectively. According to Saunders et al. (2009), high response rates are preferred in survey research because of the concomitant augmented accuracy of estimates of parameters, minimum risk of selection bias and better validity of findings. In fact, a minimum response rate of 60% from samples is cited as adequate for making valid generalisations about the population (based on the sample) because of reduced non-

response bias (Punch, 2003; Richardson, 2005). As such, the response rates attained in the current study meet the stipulated standard from mainstream statistical literature.

7.3 DISTRIBUTION OF RESPONDENTS

As shown in Figure 7.1, the Zimbabwean sample constituted 54% of the total respondents while the South African sample contributed 46% to the same. Though the initial samples drawn from the two countries were of equal size, variations in the respective response rates caused a disparity in the total sample composition. However, the researcher is confident that the extent of the differences is not large enough to significantly distort the comparative analysis of findings from the two countries.

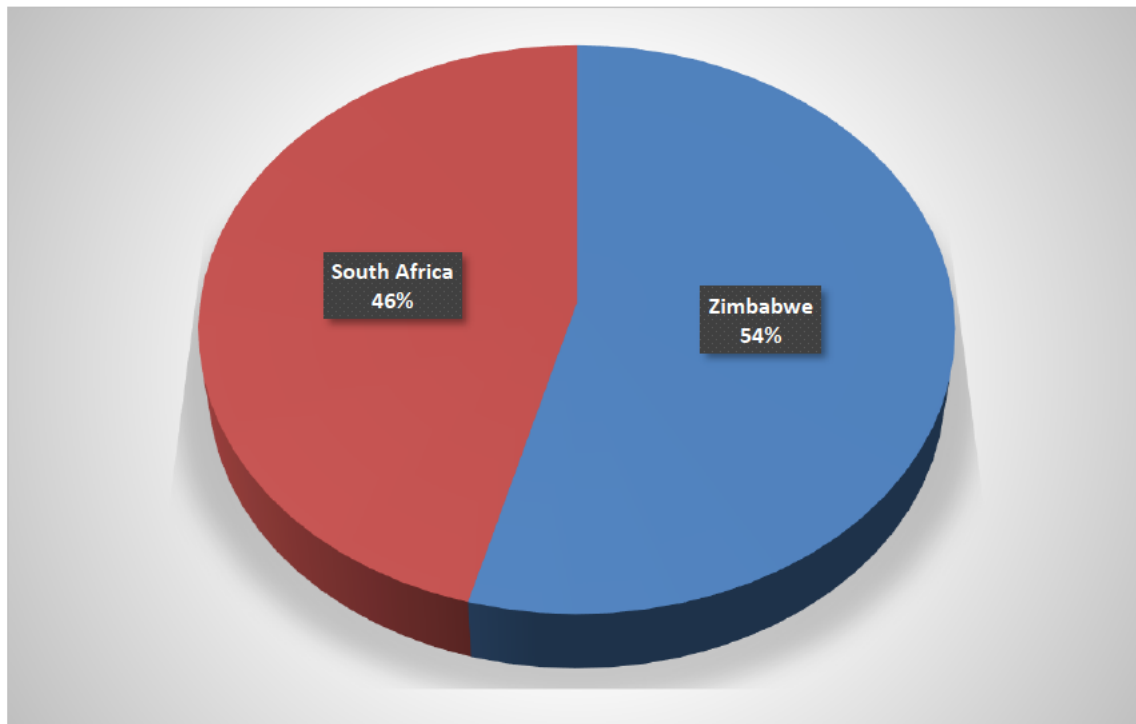


Figure 7.1 Distribution of respondents by country

7.4 DEMOGRAPHICS

The demographic details of respondents from the two countries are presented under a series of sub-sections. The variables addressed include gender, age, marital status, qualifications, employment and entrepreneurship profiles.

7.4.1 Gender of respondents

Table 7.1 illustrates that the gender distribution of the total respondents is such that there were more males (53.90%) than females (46.10%). This pattern is more pronounced in the Zimbabwean sample where males constituted 66.2%, while females comprised only 33.8%. Such a pattern of distribution was influenced by the fact that the sample was drawn from a polytechnic college, a Science, Technology, Engineering and Mathematics (STEM) education related institution where the student population tended to be predominantly male. Several studies support the observation that fewer females in developing countries enrol for STEM subjects (Bergeron & Gordon, 2015; Bottia, Stearns, Mickelson, Moller & Parker, 2015; Balakrishnan & Low, 2016). As such, the skewed pattern from the random sampling of the target population was not peculiar in view of the extant literature and the demographic composition of the population from which the sample was drawn. However, females constituted the larger component (58.5 %) of the South Africa sample, while males (41.50%) were in the minority. The situation in the South African case was because of the nature of the target population of this study, which comprised mainly females. The majority of respondents sampled from the business degree course at the CUT, who had just completed a subject in entrepreneurship, were predominantly female. Historical enrolment figures at South African universities indicate that females constitute a larger component of the total students' enrolment in business and management programmes (Southern Africa Regional Universities Association South Africa Data Profile, 2012).

7.4.2 Age of respondents

As can be observed in Table 7.1, the greatest numbers of respondents from both participating countries are concentrated around the 21 to 30 age group. Typically, this reflects the general age range of undergraduate students at tertiary education institutions in the two countries, which comprises a predominantly young adult

population. The second largest age category was the below 21 category for the Zimbabwean sample and the 31 to 40 for the South Africa respondents. Notably, the South African sample comprised of older respondents as compared to the Zimbabwean sample. The reason may be that in South Africa the matric qualification, which is the school-leaving qualification remains the basic passport for successful placement in the market, hence pressing family commitments may compel students, especially Black African students, to seek employment first and come back to university through mature entry or recognition of prior learning at a later period in their lives (Nilsson, 2015).

Table 7.1 Demographic characteristics of respondents

VARIABLE	Category	Total		Zimbabwe		SA	
		Frequency	%	Frequency	%	Frequency	%
<i>Gender</i>	Male	153	53.90%	102	66.20%	54	41.50%
	Female	131	46.10%	52	33.80%	76	58.50%
<i>Age</i>	Below 21	36	12.70%	31	20.10%	5	3.80%
	Between 21 – 30	166	58.50%	108	70.10%	58	44.60%
	Between 31 – 40	66	23.20%	14	9.10%	52	40%
	41-50	16	5.60%	1	0.60%	14	10.80%
	50 and above	1	0.00%	0	0%	1	0.80%
<i>Marital status</i>	Never married	197	69.40%	124	80.50%	73	56.20%
	Married	75	26.40%	29	18.80%	46	35.40%
	Divorced/Separated	12	4.20%	1	0.60%	10	7.70%
	Widowed	0	0.00%	0	0%	1	0.80%
<i>Highest qualification level</i>	High school/ Matric	88	31.00%	88	57.10%	0	0%
	Tertiary certificate	72	25.40%	61	39.60%	11	8.50%
	Diploma/degree	118	41.50%	4	2.60%	114	87.70%
	Other	6	2.10%	1	0.60%	5	3.85%
<i>Current field of study</i>	Applied sciences	33	11.62%	30	19.48%	3	2.30%
	Business	142	50.00%	31	20.12%	111	85.40%
	Engineering	103	36.27%	92	59.75%	11	8.5
	Humanities & Other	6	2.11%	1	0.65	5	3.8

7.4.3 Marital status of respondents

Regarding marital status, most respondents from both countries (69.4%) were not married. This was also true of the individual countries, where 80.5% and 56.2% of

Zimbabwean and South Africa respondents, respectively, were not married. Respondents who were married formed the next largest category (26.4%) for the total sample. It can be interpreted that students generally prefer to accomplish their university studies first before they make marriage commitments due to the heavy resource and time investment required of both university education and marriage unions. The reasoning is that marriage commitments may interfere with the time, energy and effort that need to be invested into acquiring a university qualification (Bozick & Estacion, 2014).

7.4.4 Highest qualification of respondents

A strange pattern can be perceived in the highest level of qualifications of South African respondents compared to those of their Zimbabwean counterparts. For the Zimbabwean sample, holders of high school /matric certificates were the majority (57.1%), followed by tertiary certificates (39.6%) and diploma/degree holders (2.6%). This is in contrast to the South Africa sample where all respondents had at least a tertiary education qualification, with diploma/degree holders constituting the majority of respondents (87.7%). The distributions concur with the age distributions of the respondents in the respective countries, with Zimbabwean respondents being relatively younger than South Africa respondents. The peculiarity of the South African sample can be attributed to the uniqueness of Universities of Technology where diplomas are some of the entry level qualifications at these institutions, which feed into mainstream degrees and postgraduate qualifications (Central University of Technology Prospectus, 2016). Comparatively speaking, the logical repercussion is that younger respondents in the Zimbabwean sample could have generally accumulated lesser qualifications than their older counterparts in the South African university context, and hence, these distinct disparities.

7.4.5 Field of study of respondents

Inter-country variations in the respondents' field of study can be observed in Table 7.1. For the Zimbabwean sample, most of the respondents (79.23%) majored in technical areas (mainly Engineering and Applied Sciences) of study. The remainder were from Business-related and other areas of study. With the South African sample, the majority

of respondents (85.4%) were studying Business-related courses, while the rest (14.6%) were enrolled for other courses. These fundamental differences had more to do with the composition of these inter-country samples than anything else.

It is plausible that the inter-country disparities, on the basis of demographic variables, in sample composition could influence the responses in the study as some past studies have shown. Thus, demographic factors were statistically controlled during the testing for the direct predictive influence of entrepreneurship education (EE) and technological creativity (TC) on entrepreneurship intentions (EI). The next sub-section presents the employment and entrepreneurship profiles of respondents.

7.4.6 Employment profile

To guard against the confusing effects of unnecessary information overload, the profiles of the respondents are presented in total instead of a country by country approach. Figure 7.2 demonstrates that 55.3% of the respondents were employed at the time of this study, with 68.7% of the respondents having been employed before, whilst 83% of the respondents were not running a business at the time of this investigation. The fact that a majority of the respondents across the two countries were not running a business could be attributed to the huge financial, time and effort investments of university education that complicated the opportunities for investing in new venture creation or running a business (Jain & Ali, 2013). The moderately dominant group of recently employed students could be weighed heavily in favour of the South African sample where students chose to seek employment immediately after their matriculation (i.e. completion of their high school) or after attaining their first post-secondary qualifications (e.g. diploma, post-secondary certificate) (Spaull, 2013). The relatively low numbers of students which who were juggling their university education with employment stem from the difficulty of securing part-time employment while continuing with private university study (Yu, 2013). The South African student reluctance to secure employment while studying could be attributed to the availability of university bursaries and government funding (e.g. National Student Financial Aid Scheme (NSFAS)) for both undergraduate and postgraduate studies to support South African nationals' university education (Cloete, 2016).

7.4.7 Respondents' entrepreneurial profile

Figure 7.2 demonstrates that a total of 56.5% of the respondents had a family member who was running a business at the time of this investigation, 64.7% had friends who were running businesses, whilst 67.5% had a personal connection with an entrepreneur. The aforementioned statistics suggest that a student has a moderately abundant entrepreneurial exposure judging from their entrepreneurial affinities and ascriptions (Sharma, 2015).

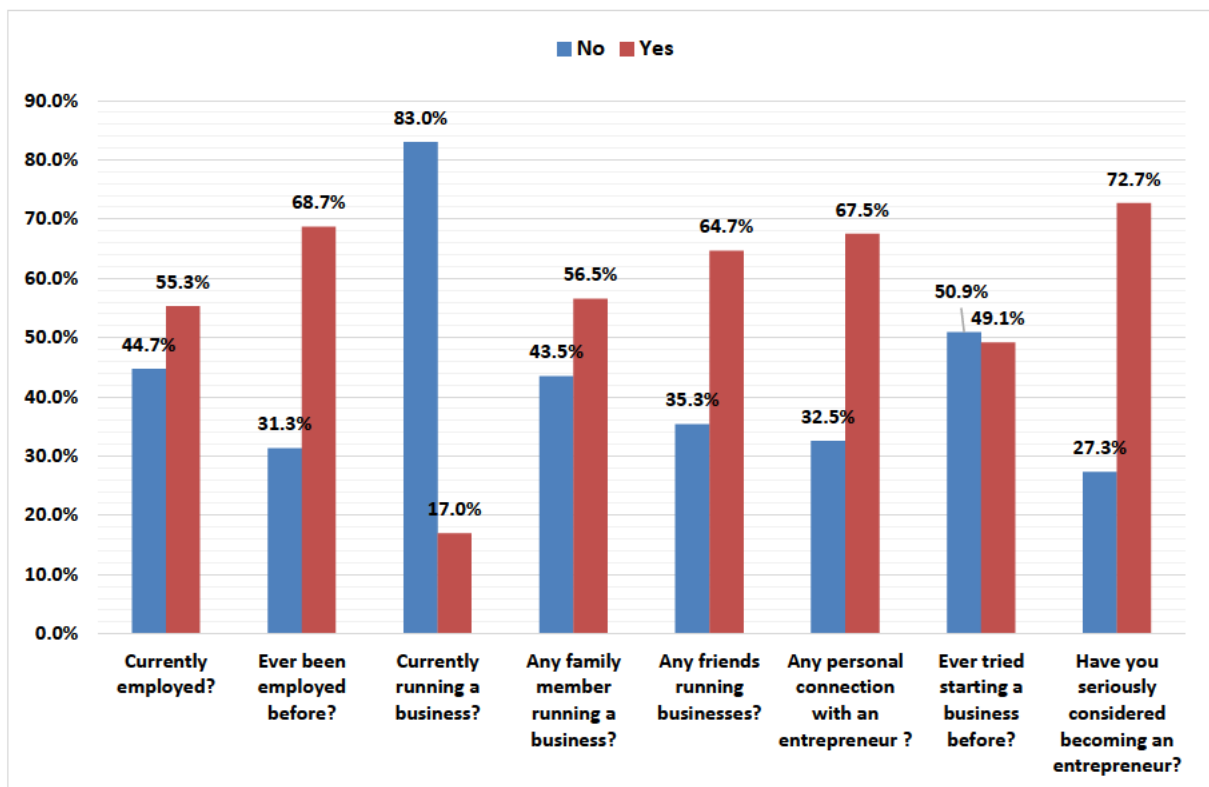


Figure 7.2 Entrepreneurial knowledge and experience of respondents

It is also evident from Figure 7.2 that a total of 50.9% of the respondents had never tried starting a business before and 72.7% of the respondents had seriously considered becoming entrepreneurs. The fact that almost half of the combined sample had never created a business combined with the almost three quarters of the combined sample that had contemplated creating a business provides an ambivalent picture of lack of nascent entrepreneurship among students are both institutions.

Again, these factors were statistically controlled for during the testing of the main regression model.

7.5 INFERENCE STATISTICS AND HYPOTHESES TESTING

This section presents the inferential statistics that were generated in order to test the various hypotheses of the study. The outcomes are presented in two country classifications; Zimbabwe only and South Africa only so as to enable comparisons of the two groups.

7.5.1 Construction of composite scores

Prior to performing the different statistical analyses, composite scores were constructed for the variables which were the subject of the current study. In other words, individual items relating to a particular variable appearing on the questionnaire (See Appendix B) were used to compile a total score for that variable. This was done so as to convert the available data to continuous or scale data, which was appropriate for the statistical techniques to be used for data analysis. The following variables were thus generated; total entrepreneurial intention, total attitude towards entrepreneurship, total subjective norms, total perceived behavioural control, total entrepreneurship education, total technology creativity, total need for achievement, and total locus of control, total risk-taking, and total psychological traits.

Total Entrepreneurship Intention was calculated as the sum of items B19, B110, B111, B112, B113, and B114. Total attitude towards entrepreneurship was calculated as the sum of C116, C219, C320, C321, C322, C323, C324, C115.R, C117.R, and C218.R. For the above variable, items C115, C117, and C218 were reverse scored because they were negatively worded. Total subjective norms were calculated as the sum of D126, D127, D128, D230, D231, D232, D333, D334, D335, D336, and D337. Total perceived behavioural control was calculated as the sum of E138, E139, E140, E141, E142, E143, E144, E145, E146, E147, E148, E149, E150, E151, E152, and E153. Total entrepreneurship education was calculated as the sum of F155, F156, F157, F158, F159, F260, F261, F262, F263, F264, F265, F266, and F267. Total Technological Creativity was calculated as the sum of G176, G177, G178, G179,

G180, G181, G182, G183, G184, G185, G186, and G187. Total need for achievement was calculated as the sum of H188, H189, H190, H191, H192, H193, and H194. Total locus of control was calculated as the sum of H295, H296, H297, H298, and H299. The total risk-taking propensity score was calculated as the sum of H3100, H3101, H3102, H3103, H3104, and H3105. Total psychological traits were calculated as the sum of H188, H189, H190, H191, H192, H193, H194, H295, H296, H297, H298, H299, H3100, H3101, H3102, H3103, H3104, and H3105. It should also be noted that the total psychological traits construct combined items from locus of control, need for achievement and risk-taking propensity. The next sub-section relates to the preliminary checks conducted on the new variables (i.e. composite scores) in order to test for their reliability and normality of distribution.

7.5.2 Reliability

After preparing the composite scores, reliability tests were conducted on the new variables. Thus, Cronbach alpha coefficients (α) were calculated for the entire composite scores (see Table 7.2). The purpose of this was to assess the internal consistency of responses among a group of questions. In other words, the intention was to determine if a group of questions measured the same construct, concept, or idea. George and Mallery (2016) proposed the following guidelines for evaluating α value: > 0.9 excellent, > 0.8 good, > 0.7 acceptable, > 0.6 questionable, > 0.5 poor, \leq 0.5 unacceptable. It is also important to highlight that the Cronbach reliability test assumes that the items being tested measure a single construct (i.e., the construct is one-dimensional) and that observations are independent of each other.

Table 7.2 illustrates that the outcome of the conducted reliability tests demonstrates that all the new variables generated are reliable and acceptable, given the Cronbach Alpha coefficient values which are all above 0.7. The issue of normality is dealt with in the next sub-section.

Table 7.2 Reliability tests results

Scale	No. of Items	Alpha coefficient
Total Entrepreneurship Intention	6	0.91
Total Attitude Towards Entrepreneurship	10	0.78
Total Subjective Norms	11	0.86
Total Perceived Behavioural Control	16	0.93
Total Entrepreneurship Education	13	0.84
Total Technological Creativity	12	0.85
Total Need for Achievement	7	0.82
Total Locus of Control	5	0.73
Total Risk Taking Propensity	6	0.77
Total Psychological Traits	18	0.85

7.5.3 Test for normality

The choice of the inferential technique to utilise in data analysis depends on whether the datasets relating to the study variables involved are normally distributed or not. Parametric tests are used in the case of a normally distributed data set. In contrast to this, non-parametric techniques are used for datasets which are not normally distributed. In light of this, the Kolmogorov-Smirnov (KS) test, a non-parametric technique, was performed on the data for all continuous scale variables to determine its normality, and thus decide on the category of inferential statistics to use. The results are presented in Table 7.3.

Table 6 Normality test results

Variables	KS Statistic	p-value
Entrepreneurial intention	0.170	0.000
Attitude	0.109	0.000
Subjective norms	0.096	0.000
Perceived entrepreneurial ability	0.064	0.011
Entrepreneurial education	0.154	0.000
Technology creativity	0.057	0.034
Need for achievement	0.107	0.000
Locus of control	0.116	0.000
Risk taking	0.082	0.000
Psychological factors	0.131	0.000

To make conclusions from the KS test, the p -value provided by the test is evaluated. This is done at either the 0.01 or 0.05 significance level depending on the level of accuracy required (0.01 is more accurate than 0.05). A significant p -value, one that is less than 0.01 or 0.05, means that the data for a particular variable is not normally distributed. If the p -value is greater than the stated significance level of 0.01 or 0.05, then the data for the specified variable is normally distributed. The results in Table 7.3 show that all the variables tested had p -values less than 0.05, which indicates that data for all the stated variables was not normally distributed. In other words, the data has a skewed distribution and non-parametric tests had to be used for analysis.

7.5.4 Level of entrepreneurship intention

The findings presented in this sub-section help to answer the research question: *do the students exposed to entrepreneurship education at particular tertiary institutions in South Africa and Zimbabwe intend to engage in entrepreneurship after completing their studies?*

In order to address this research question, the mean percentages of the responses which expressed agreement (i.e. agree and strongly agree) and statements on the extent of entrepreneurship intentions of the respondents were calculated on a total and per country basis. These are presented in Figure 7.3.

The findings presented in Figure 7.3 imply that a majority of respondents, both in Zimbabwe and South Africa, articulated agreement with most of the statements on the questionnaire relating to entrepreneurship intention. The level of agreement was stronger for Zimbabwe as compared to South Africa. This is indicated by the higher percentage scores on each statement measuring entrepreneurship intention for Zimbabwean respondents.

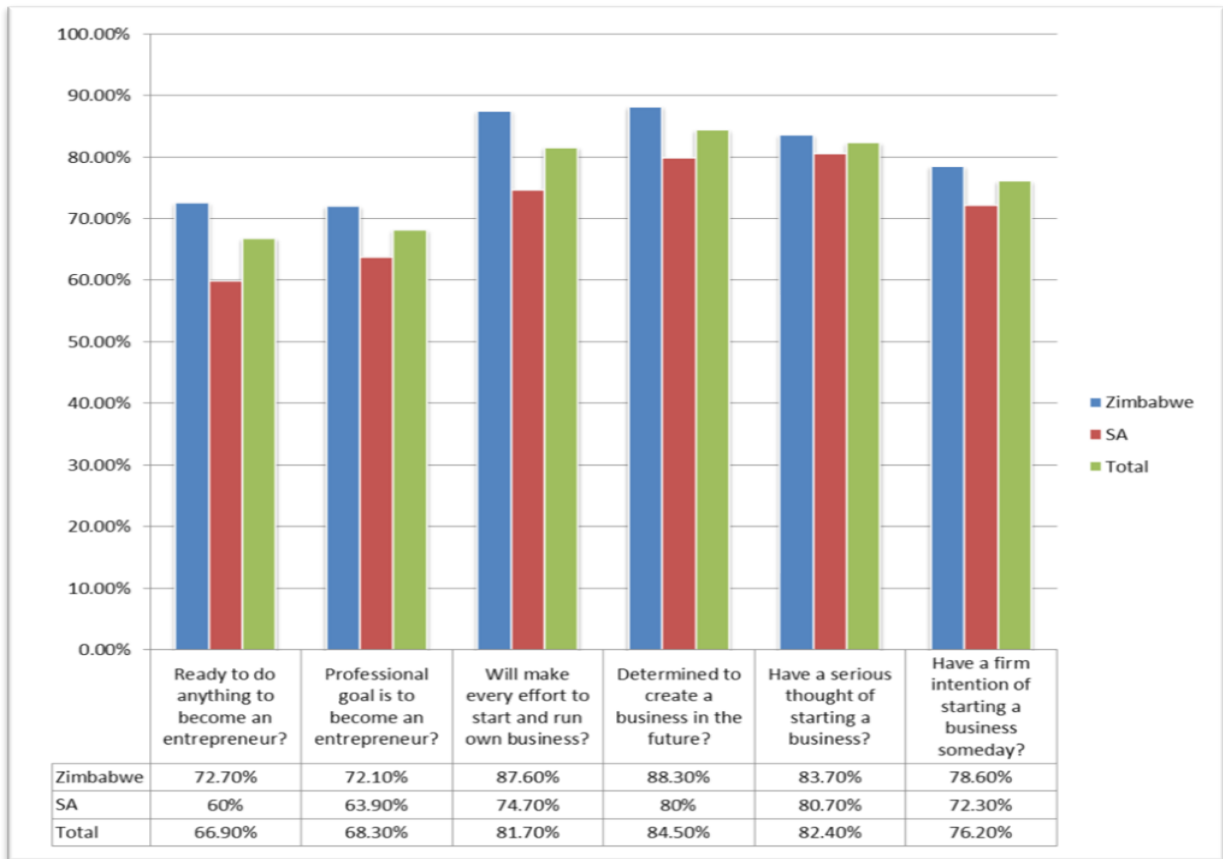


Figure 7.3 Entrepreneurship intentions of respondents

To make final evaluations on the extent of entrepreneurship intention of respondents from Zimbabwe and South Africa, the percentage scores on each statement relating to entrepreneurship intention for each country and in total were then averaged. The results are presented in Table 7.4.

Table 7.4 Mean percentages of entrepreneurial intention

Variables	Country of residence	Mean Score	Average EI (%)
Entrepreneurial Intention	Zimbabwe	25.247	80.5%
	South Africa	24.115	72%
	Overall	24.729	76.67%

The mean percentage of entrepreneurial intention for the overall group is high (76.67%), indicating that most of the respondents intended to engage in entrepreneurship upon completing their studies. Similarly, when the results are

analysed on a country of residence basis, the mean percentages remain high at 80.5% and 72% for respondents from Zimbabwe and South Africa, respectively. These high percentages underscore that a majority of the selected students in Zimbabwe and South Africa intended to engage in entrepreneurship after finishing their college studies. The findings from the Zimbabwean sample are not surprising as most school-leavers and college graduates from struggling economies are more inclined to entrepreneurship and self-employment due to the scarcity of alternative formal employment opportunities (Brixiova et al., 2015; Kelley et al., 2010). Hence, it is expected that the Zimbabwean respondents would show higher levels of entrepreneurship intention as compared to South African sample respondents due to the ailing economy they function in.

The aforementioned findings complement Manuere et al.'s (2013) study on the entrepreneurial knowledge and attitudes of fourth year Commerce students at a Zimbabwean university which revealed that most of the respondents in that study were positively inclined towards entrepreneurial careers. Similarly, Dabale and Masase's (2014) survey of alumni that graduated from the Faculty of Management and Administration (FMA) at the Africa University (Zimbabwe) who had taken an elective course of Entrepreneurship and Small Business Management in their final year of study found that most of the respondents had high entrepreneurial intentions. Nonetheless, it is ironic to note that the findings of the current study seem to contradict other studies conducted in this country. For instance, Hosho et al.'s (2013) study of the tuition of STEM education at a Zimbabwean university revealed that a majority of the respondents were negatively predisposed towards entrepreneurship upon their exposure to entrepreneurship education.

The positive results from the South African respondents were unanticipated as SA citizens are often cited as having comparatively low entrepreneurship intentions and often shunning such a career choice by the Global Entrepreneurship Monitor Reports (Orford, Herrington & Wood, 2004; Harrington, Kew & Kew, 2010; Kelley et al., 2010; Singer, Arreola & Amorós, 2014). The Global Entrepreneurship Monitor, an annual global study conducted by a consortium of universities to analyse the level

of entrepreneurship activity in a wide range of countries tends to rank South Africa low on Total Entrepreneurial Activities (TEA) in comparison to middle income countries such as Brazil and India (Bosma et al., 2013; Herrington & Kelley, 2012; Singer et al., 2015). However, these findings of high entrepreneurship intentions amongst the respondents are supported by results from some previous studies which suggest that South African university students, at various levels of study and in diverse contexts, have strong intentions to engage in entrepreneurship (Davey, Plewa & Struwig, 2011; Malebana & Swanepoel, 2015; Nieuwenhuizen & Swanepoel, 2015; Tshikovhi & Shambare, 2015).

Overall, the strong entrepreneurial intention expressed by most of the respondents is indicative of a positive inclination amongst both Zimbabwean and South African college students towards embarking on entrepreneurial career paths in the near future. These may be signs of a positive reaction to the two countries' respective policy interventions intended to solve the youth unemployment problem through offering entrepreneurship education at tertiary education institutions, which if effectively harnessed may achieve the desired goals. For instance, the South Africa government is implementing two very important initiatives, namely the Integrated Strategy on the Promotion of Entrepreneurship and Small Enterprises and the Youth Enterprise Development Strategy (2013-2023) to encourage entrepreneurship (Department of Trade and Industry, 2013). The Zimbabwean government also established a ministry of small and medium enterprises to drive the entrepreneurship initiative in the Zimbabwean economy. However, the researcher is also cognisant of the need to be wary of over-enthusiastic expressions of entrepreneurship intention by unemployed students as demonstrated by the findings of the current study. This is captured in Viviers, Solomon and Venter's (2011:46) caveat that '...students may harbour dreams about independent employment, but once they get used to the benefits of full-time, salaried employment, they may prefer the security and fringe benefits thereof.'

7.5.5 EI and country of residence

This sub-section addresses the following hypotheses:

H₀1: There is no statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

H_a1: There is a statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

A test for significant group differences is required to determine whether or not there was a statistically significant difference in the entrepreneurship intention levels of South African and Zimbabwean respondents exposed to entrepreneurial education. Thus, the Mann-Whitney U test, a non-parametric test, which is used to assess the presence of significant differences in a continuous or ordinal variable on the basis of a single dichotomous variable, in this case country of residence, was used. It is the non-parametric equivalent of the independent sample *t*-test but does not share the independent samples *t*-test's distributional assumptions. The test uses the mean ranks of the scores in each group to compute the *U* statistic, which in turn is used to compute the *p*-value (i.e., significance level). A significant result of this test suggests that the two groups have reliably different scores on the dependent variable. The Mann-Whitney U test assumes that the observations are independent of each other and that the dependent variable has a scale or ordinal level of measurement. The technique was chosen because the datasets for the continuous variables were not normally distributed, and therefore not suitable for the parametric *t*-test, which also seeks to ascertain the existence of statistically significant differences between independent samples.

The medians of Total entrepreneurship intention between country levels were 27 for Zimbabwe and 26 for South Africa. There were 154 observations in Zimbabwe and 130 observations in South African. The results of the Mann-Whitney U Test were not significant, $U = 11130.5$, $z = -1.64$, $p = .102$. The mean rank for Zimbabwe was 149.78 and the mean rank for South Africa was 133.88. This suggests that the distribution of

Total entrepreneurship intention for Zimbabwe is not significantly different from the distribution of total entrepreneurship intention (TEI) for South Africa. Table 7.5 presents the results of the Mann-Whitney U Test.

Table 7.5 Mann-Whitney U test for TEI

Variable	Zimbabwe	South Africa	U	Z	P
	Mean Rank	Mean Rank			
Total Entrepreneurship intention	149.78	133.88	11130.5	-1.64	.102

The lack of a statistically significant difference in the mean levels of entrepreneurship intention is somewhat unforeseen for two reasons. Firstly, the demographic structures of the samples from the respective countries were markedly distinct in a number of aspects, which might possibly have exerted some influence on the respondents' intention to engage in entrepreneurship. An examination of the demographic variables shown earlier in the demographic factors subsection shows that the Zimbabwean sample had a comparatively younger and predominantly unemployed composition in contrast to the South African sample. Logically, one would have expected the South African respondents, most of who were on full-time paid employment, to have a lesser degree of entrepreneurship intention compared to the Zimbabweans because of the comforts associated with a full time job (Viviers et al., 2011). However, the current study's findings are supported by Malebana's (2014) study which revealed a positive correlation between prior employment experience and the likelihood of being someone who is currently running a business or at least having tried to start a business before. The researcher is mindful of the observation by Shapero and Sokol (1982) that disgruntlement with one's job may be a displacement or push factor, which can compel an individual who is employed full-time to consider other career options like entrepreneurship. This is called entrepreneurship by necessity. This may be a plausible explanation for the high level of entrepreneurship intention shown by the South African sample, which is almost at the same level as that demonstrated by Zimbabwean respondents.

The second reason that aroused curiosity over the findings is that past studies have generally shown South African citizens to have lower entrepreneurship intention than citizens of some countries in sub-Saharan Africa. For instance, Botswana with a stable economy just like South Africa, had an entrepreneurship intention rate of 61.9% compared to South Africa's 10.9% (Kelley, Singer & Herrington, 2015). The researcher, bearing in mind this contrast, expected a contrast in the entrepreneurship intention rates of a factor-driven economy (Zimbabwe) and that of an efficiency driven economy (South Africa). After all, regional disparities in entrepreneurship intention rates have often been observed in studies undertaken in diverse countries (Franco, Haase & Lautenschla, 2009; Walter & Dose, 2015). To corroborate this, Franco, Haase and Lautenschla's (2009:270) study which sought to ascertain the entrepreneurship intention of university students in different European regions underscored the existence of regional variations, which were attributed to what they termed the "regional dimension". The regional dimension revolves around social and cultural influences that are unique to individual countries. The almost equivalent entrepreneurship intention (to that of the Zimbabwean counterparts) of South African students could be attributed to the increased visibility of South African entrepreneurial interventions targeting the youth and the fact that the South African sample covered students exposed to entrepreneurship. In addition, Walter and Dose (2012) also affirm that social embeddedness and regional context shape the impact of entrepreneurship education programmes on students leading to regional variation in entrepreneurship intention levels of university students.

7.5.6 EE and immediate determinants of EI

This sub-section presents results from tests to address the following hypothesis:

H₀₂ There are no significant relationships between particular Zimbabwean and South African students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

H_{a2}. There are significant relationships between particular Zimbabwean and South African students' exposure to entrepreneurship education and the immediate

determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

To establish whether or not there were statistically significant relationships between students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions, correlation tests were conducted for the following pairs of variables:

- entrepreneurship education and attitude towards entrepreneurship
- entrepreneurship education and subjective norms
- entrepreneurship education and perceived entrepreneurial ability

Since the results of the Kolmogorov-Smirnov KS test revealed that the variables were not normally distributed, the Spearman's rho correlation coefficient test was used. The Spearman correlation coefficient (r_s) ranges from -1 to 1 and addresses the nature and strength of the relationship between the variables. A positive relationship between two variables is demonstrated through a correlation coefficient which is positive and with a value within the range 0 to 1. The closer the value is to 1, the stronger the relationship between the two variables. In the case of a negative relationship, the correlation coefficient is negative and its value lies between -1 and 0. The closer the value is to -1 the stronger the negative relationship between the two variables (Saunders et al., 2009).

For this study, Cohen's standard was used to evaluate the strength of both negative and positive relationships, where coefficients between 0.10 and 0.29 represent a weak relationship, coefficients between 0.30 and 0.49 represent a moderate relationship, and coefficients above 0.50 indicate a strong relationship (Cohen, 1988). To interpret whether the correlation between two variables is statistically significant, the p -value is used. A p -value's significance is measured at either the 0.01 or the 0.05 level. If the p -value is less than 0.01 or 0.05, then a significant relationship exists between the variables. If it is greater than 0.01 or 0.05, depending on the desired level of significance, then there is no significant relationship between the variables. It is important to highlight that all correlation coefficients are interdependency measures

and do not express a causal relationship between two variables. Further predictive tests, in this case a regression analysis, are necessary to ascertain any prognostic capabilities of the independent variable on the dependent variable.

The results of Spearman’s correlation test for each of the three pairs of relationships on country-by-country basis and for the whole group of respondents are presented in Table 7.6.

Table 7.6 EE and the determinants of EI

Variables	Entrepreneurship Education					
	Overall		Zimbabwe		South Africa	
	correlation coefficient	<i>p</i> -value	correlation coefficient	<i>p</i> -value	correlation coefficient	<i>p</i> -value
Attitude	0.313	0.00	0.255	0.000	0.304	0.000
Subjective norms Perceived Behavioural Control	0.329	0.00	0.402	0.000	0.145	0.113
Control	0.425	0.00	0.487	0.000	0.386	0.000

The results above show that for the overall group, the *p*-values for the three correlation coefficients are less than 0.01. Such an outcome infers statistically significant relationships between entrepreneurship education and each of the precursors of entrepreneurial intention. The correlation coefficient between entrepreneurial education and attitude towards entrepreneurship is 0.313, thus indicating that there is a moderate positive relationship between entrepreneurship education and attitude towards entrepreneurship. Cohen’s standards presented were used to interpret the strength of the relationship as weak, moderate or strong. Positive associations on the same relationship can also be observed for the individual country results, albeit varying degrees of the relationship. The correlation coefficient is weaker for Zimbabwe

($r=0.255$) and moderate for South Africa ($r=0.304$). Thus, an improvement in entrepreneurship education is associated with a more positive attitude towards entrepreneurship in both countries. The findings from the South Africa sample mirror those by some scholars (e.g. Malebana, 2012; Muofhe & Du Toit, 2011; Tau, 2012) whose research studies in the South Africa tertiary education contexts also found a positive correlation between students' exposure to entrepreneurship and their attitude towards entrepreneurship. Similarly, Manuere, Danha and Majoni's (2013) research on the knowledge and attitude towards entrepreneurship of fourth year cross-disciplinary students who had been exposed to entrepreneurship education at a Zimbabwean University confirmed a positive association between student attitude towards entrepreneurship and their previous exposure to entrepreneurship education. These findings thus provide empirical support to the proclamations by proponents of entrepreneurship education who vouch its efficacy and ability to instil positive attitudes towards entrepreneurship amongst students (Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011; Mueller, 2011; Fayolle & Gailly, 2013).

In the case of entrepreneurship education and subjective norms, a moderate and statistically significant positive relationship was observed ($r=0.392$, $p<0.000$) for the overall group. This means that an increase in the entrepreneurship education score is associated with a higher perception of social valuation of entrepreneurship by the respondents. The correlation coefficient at country level was even stronger and significant for the Zimbabwean sample ($r=0.402$, $p<0.000$) but insignificant for the South Africa sample since the p -value of 0.113 is greater than 0.01 or 0.05. The positive correlation between entrepreneurship education and subjective norms in the Zimbabwean context find support from findings based on different contexts, such as Souitaris, Zerbinati and Al-Laham's (2007) study on the post-course effect of entrepreneurship education on the entrepreneurship intentions of students conducted at two universities (London and Grenoble). Souitaris, Zerbinati and Al-Laham's (2007) deduced that the motivational aspects of entrepreneurship education rather than the cognitive content of the course increased the students' EI and subjective norms. In addition, a recent study by Karimi, Biemans, Lans, Chizari and Mulder (2014) which sought to evaluate the influence of elective and compulsory entrepreneurship

education programs (EEPs) on students' entrepreneurial intention and identification of opportunities at six Iranian universities reveals that the both types of entrepreneurship education programmes have significant positive correlations with subjective norms and perceived behavioural control. The two sets of studies confirm the positive association between entrepreneurship education and the immediate determinants of entrepreneurship intentions, thus, giving justification to the need to evaluate the existence of predictive relationships between the two sets of variables.

A moderate and statistically significant relationship was observed between entrepreneurship education and perceived behavioural control ($r=0.429$, $p<0.000$) for all the respondents. Thus, an increase in the entrepreneurship education score is associated with higher perceived behavioural control. At country level, moderate associations are observed both in Zimbabwe ($r=0.487$, $p<0.000$) and South Africa ($r=0.386$, $p<0.000$). However, the association is stronger for the Zimbabwean sample. While no study in the Zimbabwean context has attempted to test the correlation between entrepreneurship education and perceived behavioural control, the finding is supported by Linan's (2008) study of Spanish university students on the role of different perceptions on the individual's intention to become an entrepreneur. The author used the Theory of Planned Behaviour as a guiding framework in his study and found out that an individual's perception of his or her entrepreneurial skill, an outcome of entrepreneurship education, had a positive and significant correlation with all immediate precursors of entrepreneurship intentions. Similarly, Mueller's (2011) research on the impact of specific entrepreneurship course characteristics on entrepreneurial intentions of 464 students from 17 different universities in Austria, Germany and Switzerland reveals that certain entrepreneurship education course characteristics have significant, positive but weak correlations with all the antecedents of entrepreneurship intention as outlined by the Theory of planned behaviour. Interestingly, this is contrary to a study conducted by Hattab (2014) who investigated the impact of entrepreneurship education on the entrepreneurship intention of Egyptian university students. The scholar noted that although entrepreneurship education had a positive relationship with entrepreneurship intentions and perceived desirability, no relationship existed with perceived feasibility-an equivalent of the

perceived behavioural control variable. Such a finding is unorthodox as Oyugi (2014) postulates that entrepreneurship learning exerts a relatively large impact on the students' self-efficacy.

The above discussion underscores that, on average, entrepreneurial education is positively related to almost all of the antecedents of entrepreneurial intention (i.e. attitude towards entrepreneurship, social valuation/subjective norms and perceived entrepreneurial ability). However, there is an exception, in the entrepreneurship education-Subjective norms relationship for the South African sample where the results are non-significant. This finding corroborates Malebana and Swanepoel's (2015) study on the influence of entrepreneurship education. The intentions of university students in the South African context shows that subjective norms had a non-significant relationship with entrepreneurship education, thus suggesting that the students exposure to entrepreneurship education programmes does not always have a consistent positive correlation with all the proximal antecedents of entrepreneurship intentions.

7.5.7 TC and the immediate determinants of EI

This sub-section discusses the results of testing the following hypotheses:

H₀₃: There are no statistically significant relationships between particular Zimbabwean and South African students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

H_{a3}: There are statistically significant relationships between particular Zimbabwean and South African students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

Correlation tests to establish whether or not there are statistically significant relationships between selected Zimbabwean and South African students' technological creativity levels and the immediate determinants of entrepreneurship intentions were done for the following pairs of variables:

- technological creativity levels and attitude towards entrepreneurship
- technological creativity levels and subjective norms
- technological creativity levels and perceived entrepreneurial ability

As noted earlier, the KS test revealed that both the independent and variables of concern here were not normally distributed. As earlier highlighted in the test for normality subsection, when the p -values for variables are found to be significant, then non-parametric test are used for data analysis. Thus, the Spearman's correlation coefficient test (a non-parametric technique) was used to determine the nature and strength of the relationships, if any, between the paired variables. The results of the correlation tests are presented in Table 7.7.

Table 7.7 TC and the determinants of EI

Variables	Technological Creativity					
	Overall		Zimbabwe		SA	
	correlation coefficient	p-value	correlation coefficient	p-value	correlation coefficient	p-value
Attitude	0.273**	0	.219**	0	.277**	0.002
Subjective norms	0.330**	0	.307**	0.007	.308**	0.007
Perceived Behavioural Control	0.492**	0	.551**	0	.360**	0
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

As can be seen in Table 7.7, the p -values for all the three correlation coefficients are less than 0.01. This means that there were statistically significant relationships between technological creativity level and each of the antecedents of entrepreneurial intention (attitude towards entrepreneurship, subjective norms and perceived behavioural control) for all groups of respondents. There was also a positive significant relationship between technological creativity level and attitude towards entrepreneurship for the overall group ($r=0.273$. $p< 0.000$). The correlation coefficient of 0.273 indicates a weak correlation. At the same time, weak but positive relationships

between technological creativity and the antecedents of entrepreneurship intentions were also observed for both country samples. This means that as technological creativity levels increase, the attitude towards entrepreneurship tends to improve as well. This finding complements and gives empirical support to the theoretical postulations of Rambe et al. (2015) that the entrepreneurship intentions levels of students were subject to the influence of an array of factors that include entrepreneurship education and technological creativity. Even though the application of the technological creativity variable in entrepreneurship research is relatively new, general creativity has previously been associated with entrepreneurship education and entrepreneurship intentions (Hamidi, Wennberg & Berglund, 2008).

Positive and significant relationships were also observed between technological creativity and subjective norms in the overall group, and within individual countries. For instance, the correlation coefficient for the technological creativity-subjective norms relationship for the combined respondents from both countries is 0.330 and the p -value is 0.000. The correlation coefficients of $r=0.307$ and $r=0.308$ for the relationship between technological creativity and subjective norms for the Zimbabwean and South African samples, respectively, demonstrate positive but moderate relationships. This means that technological creativity levels tend to increase as the score for social norms increases.

Lastly, significant and positive correlations were observed for the relationship between technological creativity and perceived behavioural control. For the overall and South Africa categories, the relationship was moderate with correlation coefficients of 0.492 and 0.360, respectively. Moreover, the association was stronger for the Zimbabwean sample ($r=0.551$, $p<0.000$). Therefore, an increase in technological creativity is associated with an increase in perceived behavioural control. The stronger relationship between technological creativity and perceived behavioural control for the Zimbabwean sample unlike in the South African sample can be explained by differences in sample demographic characteristics. The Zimbabwean sample comprised relatively younger respondents who were not yet employed permanently. The age factor and the fact that the Zimbabwean labour market does not offer many

job prospects explain why school-leavers turn to entrepreneurship as the next best alternative for sustaining their livelihoods (Herrington & Kelley, 2012). As such, chances are high they will respond more positively to any policy interventions that seek to enhance their chances of success as entrepreneurs. In the case of the South African sample, most of the respondents were relatively older and employed in full-time jobs that offered reliable income. A career path change for a person in such a position implies a loss of current income and no guarantee of a stable source of income in the new career (London, 2014). Therefore, career change decisions are likely to invoke fear of failure as such South African respondents had comparatively more to lose. As such, exposure to entrepreneurship education is unlikely to have a more positive impact on an individual in such circumstances' self-belief as compared to a person with less to lose and with no other career option except entrepreneurship.

The preceding analysis highlights that technological creativity is positively related with each of the antecedents of entrepreneurial intention. These results are not surprising as they concur with previous research on the factors influencing entrepreneurship behaviour that have tended to link creativity with antecedents of entrepreneurship intentions, actual entrepreneurship intentions and entrepreneurship behaviour (Amabile, 1997; Ward, 2004; Fillis & Rentchler, 2010; Baron & Tang, 2011; Propstmeier, 2011; Biraglia & Kadile 2016).

7.5.8 EE + TC and the immediate determinants of EI

This section presents the results of testing the following hypotheses:

H₀₄ EE+TC do not predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

H_{a4} EE+TC predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

Multiple regression analysis was performed in order to assess whether entrepreneurship education and technological creativity jointly predict the antecedents

of entrepreneurship intentions. Here, separate tests for the effect of EE+TC on each of the three proximal antecedents of entrepreneurship intentions were conducted. Multiple regression analysis, however, is a statistical technique which seeks to establish if a predictive relationship exists between a single-dependent variable and several independent variables (Mohapatra, Sreejesh & Anusree, 2014). The technique makes the following assumptions about the variables concerned.

- A linear relationship between the independent(s) and the dependent variables,
- Normal distribution of errors,
- Homoscedasticity—the error variance should be constant, and
- No multicollinearity or perfect correlation between predictor variables.

The results of the multiple regression tests are presented separately for each country, Zimbabwe first and South Africa last.

7.5.8.1 EE + TC and attitude towards entrepreneurship

The first analysis sought to assess whether a significant relationship existed between entrepreneurship education and technological creativity on one hand and attitude towards entrepreneurship, on the other. The 'Enter' variable selection method was chosen for the linear regression models. This method inputs all selected variables into the model. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a Chi-square distribution, also called a Q-Q scatterplot. Quantiles are each of group of values of a variant which allot a frequency distribution into equivalent sets, each comprising the same portion of the overall population (Fox, 2015). The assumption of normality is met when the quantiles of the residuals are not strongly deviating from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. The Q-Q scatterplot for the Zimbabwe sample is presented in Figure 7.4 and exhibits no violation of one of the pre-conditions for multiple regression analysis. The lack of violation meant that the multiple regression analysis technique could be used with these variables.

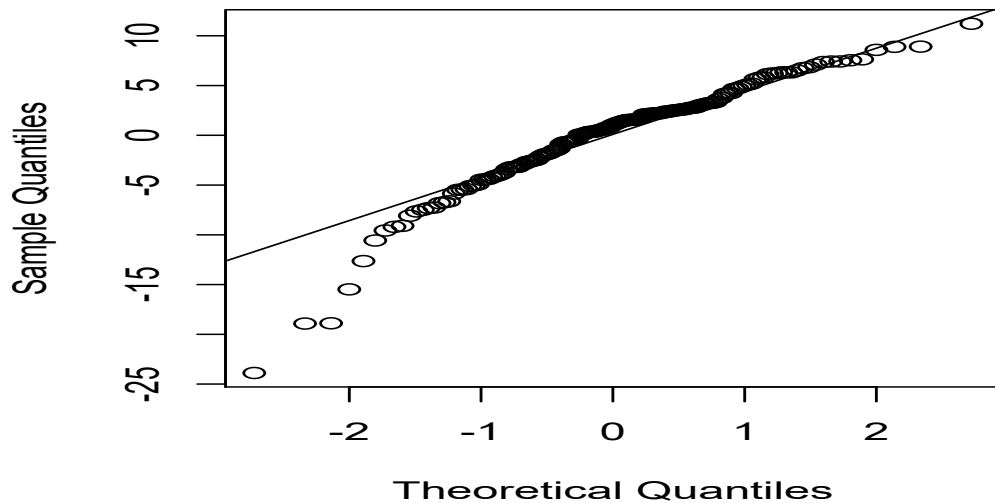


Figure 7.4 Q-Q scatterplot for normality (Zimbabwe)

The assumption of homoscedasticity was assessed by plotting the model residuals against the predicted model values. The assumption is met if the points appear randomly distributed with a mean of zero and no apparent curvature. The assumption is met if the points are not unevenly distributed and no curvature is apparent. The conditions were met for the Zimbabwean sample. Variance inflation factors (VIFs) for the same sample were calculated to detect the presence of multi-collinearity between predictors. High VIFs indicate increased effects of multi-collinearity in the model. Variance inflation factors greater than 6 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit. All predictors in the regression model have variance inflation factors (VIF) which are less than 10. This implies that the condition for lack of multicollinearity was satisfied for the concerned variables. Table 7.8 presents the VIFs for each predictor in the model.

Table 7.8 VIFs for EE and TC (Zimbabwe)

Variable	VIF
Total Entrepreneurship Education	1.34
Total Technological Creativity	1.34

The results of the linear regression model were significant, $F(2,151) = 5.63$, $p = .004$, $R^2 = 0.07$, indicating that approximately 7% of the variance in Attitude towards entrepreneurship is explainable by entrepreneurship education and technological creativity. Entrepreneurship education significantly predicted attitude towards entrepreneurship, $B = 0.13$, $t(151) = 2.12$, $p = 0.035$. The $B=0.13$ indicates that on average, every one-unit increase of entrepreneurship education results in a 0.13 unit change in attitude towards entrepreneurship. Technological creativity was not a significant predictor. Attitude towards entrepreneurship was $B = 0.08$, $t(151) = 1.18$, $p = 0.240$. Based on this sample, a one-unit increase of technological creativity does not have a significant effect on attitude towards entrepreneurship. Table 7.9 summarises the results of the regression model.

Table 7.9 Predicting attitude towards entrepreneurship (Zimbabwe)

Variable	B	SE	B	T	p
(Intercept)	26.17	3.38	0.00	7.75	< .001
Total Entrepreneurship Education	0.13	0.06	0.19	2.12	.035
Total Technological Creativity	0.08	0.07	0.11	1.18	.240

Note: $F(2,151) = 5.63$, $p = .004$, $R^2 = 0.07$

Key: (B)= Unstandardized coefficients a, SE=Standard Errors of the coefficients, β =Standardized coefficients, p =significance level of the t-statistic. F = F-statistic, R^2 =coefficient of determination

Although entrepreneurship education and technological creativity were expected to collectively predict attitude towards entrepreneurship, the single most striking observation that emerged from the data is the non-significant effect of technological creativity in the equation. The result is inconsistent with findings from other studies, which found a predictive effect of creativity on attitude. For instance, Usta and Akkanat's (2015) investigation of the influence of scientific creativity level of elementary seventh grade students on their attitude towards science and technology revealed a predictive relationship between the two variables. The findings of the current study should be interpreted with caution as attitude is just one factor through which technological creativity can exercise its influence on entrepreneurship intention. In addition, the fact that the findings of this study are based on a relatively small sample extracted from one tertiary education institution in Zimbabwe demands that caution be

exercised as such findings might not be reflective of the situation at all tertiary education institutions in the country.

A multiple regression analysis assessing the effect of entrepreneurship education and technological creativity on attitude towards entrepreneurship was also conducted on the South African sample. In the same way as with the Zimbabwean sample, preliminary checks on the normality, homoscedasticity and VIF were done and the results confirmed compliance with the requirements of multiple regression analysis (also see Figure 7.5 for Q-Q scatterplot for normality for technological creativity and entrepreneurship education predicting attitude towards entrepreneurship for the South African group).

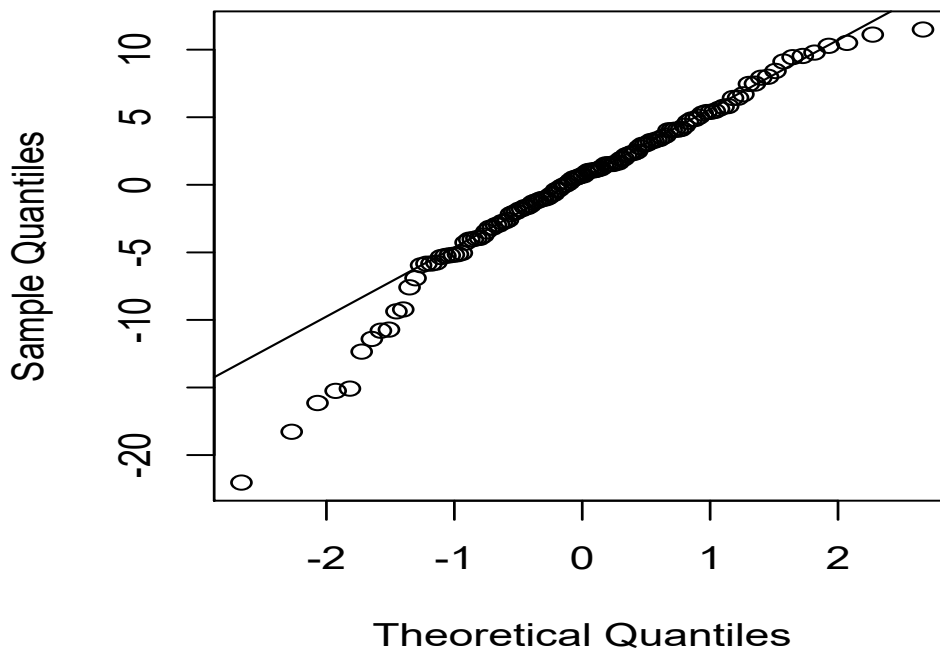


Figure 7.5 Q-Q scatterplot for normality (SA)

Variance inflation factors (VIFs) were calculated to detect the presence of multicollinearity between predictors. High VIFs indicate increased effects of multicollinearity in the model. Variance Inflation Factors greater than 6 are cause for concern, whereas a VIF of 10 should be considered the maximum upper limit. All

predictors in the regression model have variance inflation factors (VIF) less than 10 and therefore the conditions for lack of multicollinearity, which are essential to conduct a multiple regression analysis, were met. Table 7.10 presents the VIF for each predictor in the model.

Table 7.10 VIFs for TC and EE (South Africa)

Variable	VIF
Total Technological Creativity	1.36
Total Entrepreneurship Education	1.36

The results of the linear regression model were not significant, $F(2,127) = 2.79$, $p = .065$, $R^2 = 0.04$, thus indicating that total technological creativity and total entrepreneurship education R did not explain a significant proportion of variation in total attitude towards entrepreneurship. Since the overall model was not significant, the individual predictors were not examined further. Table 7.11 summarises the results of the regression model.

Table 7.11 Predicting attitude towards entrepreneurship (SA)

Variable	B	SE	B	T	p
(Intercept)	25.27	4.32	0.00	5.85	< .001
Technological Creativity	0.11	0.09	0.12	1.17	.245
Entrepreneurship Education	0.10	0.09	0.12	1.16	.247

Note. $F(2,127) = 2.79$, $p = .065$, $R^2 = 0.04$

Interestingly, there is no significant predictive relationship between EE+TC and attitude towards entrepreneurship notwithstanding the moderate positive correlations between the individual predictor variables and the dependent variable. The finding appears to confirm Williams' (2004) observation that it appears that attitude towards divergent thinking (*read* entrepreneurship) should relate to creativity in organisations, although the link has not yet been empirically established. However, in the continued quest to enhance the entrepreneurship intentions of students through influencing the immediate determinants of entrepreneurship intentions, the findings of this study suggest that that the current entrepreneurship education course characteristics at the

CUT may be focusing less on the divergent thinking aspect, a key driver of creativity in individuals, to the extent that they cannot positively swing students' attitudes towards entrepreneurship (Schmidt, Soper & Facca, 2012). Hence, the current entrepreneurship education and technological creativity fail to predict the attitude towards entrepreneurship of participating students. The negative results from the South African sample also need to be interpreted with caution given the 35% non-response rate for the current study which may possibly have swayed the outcome.

7.5.8.2 EE + TC and Subjective norms

Another multiple regression analysis was conducted to test the predictive effect of entrepreneurship education and technological creativity on the subjective norms of respondents for both Zimbabwe and South Africa. The findings from the Zimbabwean respondents are presented first. Again, the assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a Chi-square distribution, also called a Q-Q scatterplot. As stated earlier, for the assumption of normality to be met, the quantiles of the residuals must not strongly deviate from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Figure 7.6 demonstrates that there were no strong deviations; therefore, conditions for multiple regression analysis were met.

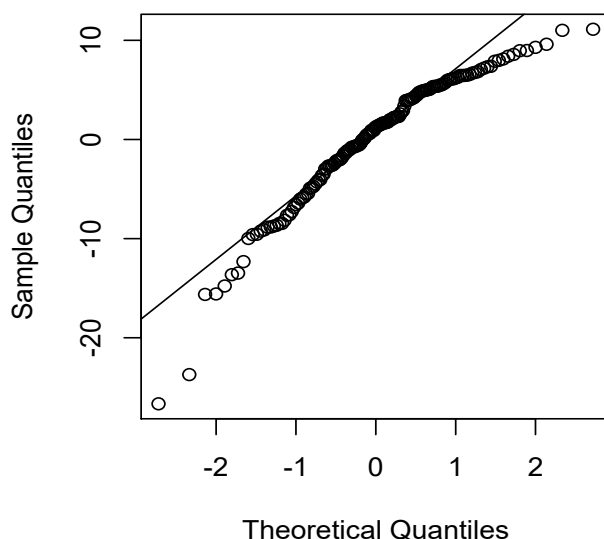


Figure 7.6 Q-Q Scatter plot for TC+EE predicting subjective norms

Variance inflation factors (VIFs) were also calculated to detect the presence of multi-collinearity between predictors. All predictors in the regression model have variance inflation factors (VIF) of less than 10, meaning that one essential condition for multiple regression analysis is met. Table 7.12 presents the VIF for each predictor in the model.

Table 7.12 VIFs for EE and TC (Zimbabwe)

Variable	VIF
Entrepreneurship Education	1.34
Technological Creativity	1.34

The results of the linear regression model were significant, $F(2,151) = 11.58, p < .001, R^2 = 0.13$, thus indicating that approximately 13% of the variance in subjective norms is explainable by entrepreneurship education and technological creativity. Entrepreneurship education significantly predicted Subjective norms, $B = 0.20, t(151) = 2.66, p = 0.009$. This indicates that on average, every one unit increase of entrepreneurship education results in a 0.20 unit change in subjective norms. Technological creativity also significantly predicted Subjective norms, $B = 0.18, t(151) = 2.14, p = 0.034$. This indicates that on average, every one unit increase of technological creativity results in a 0.18 unit change in subjective norms. The findings is in line with the results from the study by Karimi et al. (2014) on the effects of entrepreneurship education exposure on Iranian university students, which revealed that entrepreneurship education increased the students' mean score for subjective norms. However, the finding contradicts Walter and Dohse (2009) whose study found no significant predictive effect between student exposure to entrepreneurship education and their subjective norms. The inconclusiveness suggests the need for further confirmatory studies on the area. This association between entrepreneurship education and subjective, which was revealed in the current study, suggests that the course content of the entrepreneurship education programme offered in Zimbabwe increases the reliance of the students on the approval by those close to them. Table 7.13 summarises the results of the regression model.

Table 7.13 Predicting subjective norms (Zimbabwe).

Variable	<i>B</i>	<i>SE</i>	<i>B</i>	<i>T</i>	<i>p</i>
(Intercept)	26.01	4.05	0.00	6.41	< .001
Entrepreneurship Education	0.20	0.08	0.23	2.66	.009
Technological Creativity	0.18	0.09	0.19	2.14	.034

Note. $F(2,151) = 11.58, p < .001, R^2 = 0.13$

For the South African respondents, the results of the linear regression model were significant, $F(2,127) = 7.78, p < .001, R^2 = 0.11$, thus indicating that approximately 11% of the variance in subjective norms is explainable by technological creativity and entrepreneurship education. Table 7.14 summarises the results of the regression model.

Table 7.14 Predicting subjective norms (South Africa)

Variable	<i>B</i>	<i>SE</i>	β	<i>T</i>	<i>P</i>
(Intercept)	26.05	4.18	0.00	6.23	< .001
Technological Creativity	0.20	0.09	0.21	2.20	.030
Entrepreneurship Education	0.14	0.08	0.16	1.68	.095

Note. $F(2,127) = 7.78, p < .001, R^2 = 0.11$

TC significantly predicted subjective norms, $B = 0.20, t(127) = 2.20, p = 0.030$. This indicates that on average, every one unit increase of technological creativity results in a 0.20 unit change in subjective norms. Entrepreneurship education was also a significant predictor of subjective norms, $B = 0.14, t(127) = 1.68, p = 0.095$. Based on this sample, a one unit increase of entrepreneurship education did not have a significant effect on subjective norms.

7.5.8.3 EE + TC and Perceived behavioural control

The final part of this subsection considers the multiple regression analysis tests which were conducted on the predictive ability of entrepreneurship education and technological creativity on perceived behavioural control of respondents. The results for the Zimbabwean sample are presented first. Table 7.15 summarises the results of the regression model.

Table 7.15 Predicting total perceived behavioural control (Zimbabwe)

Variable	<i>B</i>	<i>SE</i>	β	<i>T</i>	<i>P</i>
(Intercept)	24.55	4.52	0.00	5.44	< .001
Total Entrepreneurship Education	0.38	0.08	0.33	4.49	< .001
Total Technological Creativity	0.48	0.10	0.37	5.03	< .001

Note. $F(2,151) = 45.59, p < .001, R^2 = 0.38$

The results of the linear regression model were significant, $F(2,151) = 45.59, p < .001, R^2 = 0.38$, thus indicating that approximately 38% of the variance in total perceived behavioural control is explainable by total entrepreneurship education and total technological creativity. Total entrepreneurship education significantly predicted total perceived behavioural control, $B = 0.38, t(151) = 4.49, p < .001$. This indicates that on average, every one unit increase of total entrepreneurship education results in a 0.38 unit change in total perceived behavioural control. Total technological creativity significantly predicted total perceived behavioural control, $B = 0.48, t(151) = 5.03, p < .001$. This indicates that on average, every one unit increase of total technological creativity results in a 0.48 unit change in total perceived behavioural control.

These results further support the idea of combining entrepreneurship education and technological creativity in order to enhance the quantity and quality of pipeline entrepreneurs in Zimbabwean tertiary education institutions. They are also consistent with those of past studies that advocate for the infusion of entrepreneurship education and technological creativity in order to enhance the perceived behavioural control of entrepreneurship students (Roffe, 1999; Lourenço & Jayawarna, 2011; Tsai & Wang, 2011; Sun, 2012;). It is worth noting that of the three antecedents of entrepreneurship intentions (attitude, subjective norms and perceived behavioural control), entrepreneurship education and technological creativity exerted the greatest influence on perceived behavioural control. This finding raises intriguing questions regarding the thrust of entrepreneurship education in Zimbabwe as it seems to explain much of the respondents' self-belief in their own abilities to engage and control their entrepreneurial actions. A possible explanation for the results may be that the tenets of the course place more emphasis on developing students' entrepreneurial

competencies and capabilities such that they encourage growth in their self-belief (Ebrahim & Schott, 2008).

For the South African sample, the results of the linear regression model were significant, $F(2, 127) = 12.32, p < .001, R^2 = 0.16$, thus demonstrating that approximately 16% of the variance in perceived behavioural control is explainable by technological creativity and entrepreneurship education. Table 7.16 summarises the results of the regression model.

Table 7.16 Predicting total perceived behavioural control (SA)

Variable	<i>B</i>	<i>SE</i>	<i>B</i>	<i>T</i>	<i>P</i>
(Intercept)	38.48	5.29	0.00	7.28	< .001
Total technological creativity	0.31	0.12	0.26	2.73	.007
Total entrepreneurship education	0.23	0.11	0.20	2.15	.033

Note. $F(2,127) = 12.32, p < .001, R^2 = 0.16$

Technological creativity significantly predicted perceived behavioural control, $B = 0.31, t(127) = 2.73, p = 0.007$. This indicates that on average, every one unit increase of technological creativity results in a 0.31 unit change in perceived behavioural control. Entrepreneurship education significantly predicted perceived Behavioural control, $B = 0.23, t(127) = 2.15, p = 0.033$. This indicates that on average, every one unit increase of entrepreneurship education results in a 0.23 unit change in perceived behavioural control.

Even though the predictive power of entrepreneurship education and technological creativity on perceived behavioural control is weaker in the South African sample ($F(2,127) = 12.32, p < .001, R^2 = 0.16$) than the Zimbabwean one, the findings have important implications for the development of effective strategies for grooming potential entrepreneurs in that country. The findings corroborate those from the Zimbabwean sample and other previous studies which confirmed the prognostic effect of entrepreneurship education and creativity on perceived behavioural control of respondents and in that way provide a firm pointer towards where the focus of entrepreneurship education should be. The findings give empirical support to Hamidi

et al. (2008) and Rosly, Junid, Faizah, Lajin and Rahim (2015) who underscore the need to groom creative and innovative entrepreneurs with the necessary competencies and self-belief in order for them to succeed in the contemporary business environment.

7.5.9 EI and its immediate determinants

This section addresses the following hypotheses:

H₀₅: The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) do not influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

H_{a5}: The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

A correlation test was done to establish whether or not there were statistically significant relationships between actual entrepreneurship intentions and antecedents of entrepreneurship intentions with the following pairs of variables:

- attitude towards entrepreneurship and actual entrepreneurship intentions
- subjective norms and actual entrepreneurship intentions
- perceived behavioural control and actual entrepreneurship intentions

The KS-test showed that the variables are not normally distributed and as a result, the Spearman's rho correlation coefficient test was used. The correlation tests aim to determine whether or not there is a relationship between actual entrepreneurship intentions and each of the antecedents of entrepreneurship intentions. The results of the correlation test are presented on a per country basis in Table 7.17 and a discussion of each of the pairs of relationships is then presented.

Table 7.17 EI versus the determinants of EIs

Country of residence	Variables	Entrepreneurial intention	
		Correlation	P-value
Zimbabwe	Attitude	0.568	0.000
	Social valuation/subjective norms	0.244	0.002
	Perceived behavioural control	0.491	0.000
South Africa	Attitude	0.656	0.000
	Social valuation/subjective norms	0.158	0.072
	Perceived behavioural control	0.546	0.000

The results in Table 7.17 demonstrate that the p -values for all the three correlation coefficients for the Zimbabwean sample are less than 0.01. This means that these linkages between actual entrepreneurship intentions and each of the antecedents of entrepreneurial intention (attitude towards entrepreneurship, social valuation/subjective norms and perceived entrepreneurial ability) are statistically significant. The correlation coefficient of $r=0.616$ between actual entrepreneurship intentions and attitude towards entrepreneurship suggests a strong and positive correlation. This means that the higher the attitude towards entrepreneurship, the higher the actual entrepreneurship intentions of students. The correlation between attitude and entrepreneurship intention is even higher in the South Africa sample where the correlation coefficient is $r=0.656$. These findings are consistent with some previous studies, both in the South African context and outside, which have demonstrated a strong correlation between attitude towards entrepreneurship and actual entrepreneurship intentions (Teixeira & Davey, 2010; Davey et al., 2011; Gerba, 2012; Malebana, 2012). This justifies the use of the Theory of Planned Behaviour as the guiding framework for this study.

Furthermore, the correlation between entrepreneurship intention and social valuation/subjective norm for the Zimbabwean sample is positive, statistically significant ($p < 0.002$), and of weak strength ($r=0.244$). The results suggest that a high level of entrepreneurship intention is associated with a high/positive score for subjective norms. The findings are consistent with those of Linan (2004) whose

validation study of the Theory of Planned Behaviour reveals that subjective norms have a significant positive relationship with actual entrepreneurial intention.

The correlation coefficient for the South Africa sample is not statistically significant given a p -value of 0.07. This means that the positive correlation coefficient of $r=0.158$ for that sample is spurious. These findings from the South African sample corroborate those of Schlaegel and Koenig (2014) who confirmed that of the three antecedents of entrepreneurship intention, subjective norms had the weakest association with actual entrepreneurship intention. However, recent research proves that that it in fact has the strongest effect (Kautonen et al., 2013).

For the pair of perceived behavioural control and entrepreneurship intention, the correlation coefficient of $r=0.491$ with a p -value of 0.000 for the Zimbabwean sample is statistically significant. This illustrates a moderate positive linkage between perceived behavioural control and entrepreneurship intention. Thus, a high level of entrepreneurship intention is associated with a high level of perceived behavioural control.

The correlation is significant ($p<0.000$) and even stronger for the South African sample with a correlation coefficient of $r=0.546$. The high coefficient for the South African sample is rather curious as a previous study by Harrington et al., (2010) on behalf of the Global Entrepreneurship Monitor revealed that South Africans had a relatively low perception of their own entrepreneurial capabilities. However, it is important to note that the respondents in the current study had been exposed to entrepreneurship education, and this might have boosted their self-belief and entrepreneurial skills, and thus explain the high correlation between perceived behavioural control and entrepreneurship intention. This finding is also consistent with that of Malebana and Swanepoel (2015) whose study of the relationship between the self-efficacy (*read* perceived behavioural control) and entrepreneurship intention of students at South African rural universities reveals a positive and significant correlation.

The above exposition highlights that entrepreneurship intention is positively related with all the antecedents of entrepreneurship intention except with subjective norms in the South African group. The findings lend support to the pre-suppositions of Ajzen's Theory of Planned Behaviour that suggest that entrepreneurship intention is an outcome of the effects of its proximate antecedents, which are attitude, subjective norms and perceived behavioural control (Ajzen, 2015). The role of subjective norms has often been found to be a weak one (Fayolle et al., 2006; Linan & Chen, 2009) and therefore require further studies to validate it.

After confirming the existence of significant correlations between entrepreneurship intention and some of its antecedents, a regression equation was estimated with entrepreneurship intention as a dependent variable and its antecedents (attitude, subjective norms and perceived behavioural control) as independent variables. This regression is done in order to test the predictive ability of attitude towards entrepreneurship, subjective norms and perceived behavioural control on entrepreneurship intention. The results are presented on country basis and those for Zimbabwe are reported first.

The results of the linear regression model were significant, $F(3,150) = 31.67, p < .001, R^2 = 0.39$, indicating that approximately 39% of the variance in total entrepreneurship intention can be explained by total attitude towards entrepreneurship, total subjective norms, and total perceived behavioural control. Total attitude towards entrepreneurship significantly predicted total entrepreneurship intention, $B = 0.47, t(150) = 7.20, p < .001$. This indicates that on average, every one unit increase of total attitude towards entrepreneurship results in a 0.47 unit change in total entrepreneurship intention. Total subjective norms were not a significant predictor of total entrepreneurship intention, $B = -0.06, t(150) = -1.14, p = 0.255$. Based on this sample, a one unit increase of total subjective norms did not have a significant effect on total entrepreneurship intention. Total perceived behavioural control significantly predicted total entrepreneurship intention, $B = 0.11, t(150) = 2.63, p = 0.009$. This indicates that on average, every one unit increase of total perceived behavioural

control results in a 0.11 unit change in total entrepreneurship intention. Table 7.18 summarises the results of the regression model.

Table 7.18 Predicting total entrepreneurship intention (Zimbabwe)

Variable	<i>B</i>	<i>SE</i>	β	<i>T</i>	<i>p</i>
(Intercept)	2.80	2.94	0.00	0.95	.342
Total Attitude towards entrepreneurship	0.47	0.07	0.52	7.20	< .001
Total Subjective Norms	-0.06	0.05	-0.08	-1.14	.255
Total Perceived Behavioural control	0.11	0.04	0.20	2.63	.009

Note. $F(3,150) = 31.67, p < .001, R^2 = 0.39$

The South African sample's results of the linear regression model were also significant, $F(3,126) = 51.46, p < .001, R^2 = 0.55$, indicating that approximately 55% of the variance in total entrepreneurship intention is explainable by total attitude towards entrepreneurship, total subjective norms, and total perceived behavioural control. Total attitude towards entrepreneurship significantly predicted total entrepreneurship intention, $B = 0.57, t(126) = 9.61, p < .001$. This indicates that on average, every one unit increase in total attitude towards entrepreneurship results in a 0.57 unit change in total entrepreneurship intention. Total subjective norms were not a significant predictor of total entrepreneurship intention, $B = 0.08, t(126) = 1.38, p = 0.170$. Based on this sample, a one unit increase of total subjective norms did not have a significant effect on total entrepreneurship intention. Total perceived behavioural control significantly predicted total entrepreneurship intention, $B = 0.11, t(126) = 2.28, p = 0.024$. This indicates that on average, every one unit increase of total perceived behavioural control results in a 0.11 unit change in total entrepreneurship intention. Table 7.19 summarises the results of the regression model.

Table 7.19 Predicting total entrepreneurship intention (SA)

Variable	<i>B</i>	<i>SE</i>	β	<i>T</i>	<i>P</i>
(Intercept)	-6.61	3.15	0.00	-2.10	.038
Total Attitude towards entrepreneurship	0.57	0.06	0.64	9.61	< .001
Total Subjective Norms	0.08	0.06	0.09	1.38	.170
Total. Perceived behavioural control	0.11	0.05	0.16	2.28	.024

Note. $F(3,126) = 51.46, p < .001, R^2 = 0.55$

The above results support previous research on entrepreneurship intention which were guided by the Theory of Planned Behaviour. As an illustration, Liñán and Chen, (2009) conducted a survey on Spanish and Taiwanese undergraduate university students in order to build an entrepreneurial intention questionnaire (EIQ) and evaluate its psychometric properties based on Ajzen's Theory of Planned Behaviour. In the study, attitude towards entrepreneurship and perceived behavioural control were found to be robust predictors of entrepreneurship intention while subjective norms' contribution was non-significant. The authors conclude that the inclusion of subjective norms as a direct predictor of entrepreneurship intention in the proposed model was problematic and further studies need to be undertaken to validate such application of the construct. This view is supported in the current study as demonstrated by the non-significant p -value of 0.170 for subjective norms and significant p -values of 0.01 and 0.024 for attitude towards entrepreneurship and perceived behavioural control respectively (see Table 7.19) This proclamation finds support in Lortie and Castogiovanni's (2015:947) observation that subjective norms failed to directly predict entrepreneurship intention in some past studies. Of interest is that a recent study that investigated the entrepreneurial intentions of 355 final-year commerce students from two universities in the predominantly rural provinces of South Africa, namely Limpopo and the Eastern Cape, also found subjective norms as not having a significant direct effect on entrepreneurship intention. The findings of the above study lend credibility to those of the current study as they are undertaken in the same regional context and yielded the same outcome concerning subjective norms. It is because of this persistent lack of significant results that some scholars have pointed out that subject norms indirectly influence entrepreneurship intention through other antecedents, such as attitude and perceived behavioural control (Ferreira, Raposo, Rodrigues, Dinis & Paço, 2012; Liñán et al., 2011).

7.5.10 EE + TC and EI

The following hypotheses were considered in this analysis:

H₆: There is no direct predictive relationship among entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected

Zimbabwean and South African students, controlling for demographic and psychological factors.

H_{a6}: There is a direct predictive relationship among entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected Zimbabwean and South African students, controlling for demographic and psychological factors.

To test the hypotheses, entrepreneurship education and technological creativity (predictors) were initially tested for any direct correlations with entrepreneurship intention (dependent variable). This was done using Spearman’s Correlation test and the results from each country sample are shown in Table 7.20.

Table 7.20 EE and TC versus entrepreneurship intentions)

Country of residence	Variables	Entrepreneurial intention	
		Correlation value	p-value
Zimbabwe	Entrepreneurial education	0.366	0.000
	Technology creativity	0.290	0.000
South Africa	Entrepreneurial education	0.255	0.004
	Technology creativity	0.291	0.001

Table 7.20 illustrates that the *p*-values for the two pairs of correlations, which are entrepreneurship education-entrepreneurship intention and technological creativity-entrepreneurship intention, are less than 0.01, thus meaning that there were statistically significant relationships between each of these concepts and entrepreneurship intention, in both country groups. The correlation coefficient between actual entrepreneurship intentions and entrepreneurial education are 0.366 and 0.255 for Zimbabwe and South Africa respectively, which indicates positive associations between entrepreneurship education and entrepreneurship intention. This means that the higher the entrepreneurship education scores in the respective groups samples, the higher the entrepreneurship intention levels. These findings corroborate the extant literature which demonstrates that there is a positive correlation between student exposure to entrepreneurship and the entrepreneurship intention levels (Izedonmi & Okafor, 2010; Ekpoh & Edet, 2011; Liñán et al., 2011; Fayolle & Gailly, 2013; Manuere

et al., 2013). The slightly higher correlation coefficient for the Zimbabwean students than the South African sample support Herrington and Kelley's (2012) assertion that individuals in struggling economies generally have a higher predisposition towards entrepreneurship than those from fairly successful economies that offer numerous economic opportunities.

Furthermore, the correlation coefficients for technological creativity and entrepreneurship intention are 0.290 and 0.291 for Zimbabwe and South Africa, respectively, thus indicating that there are positive relationships between technological creativity and entrepreneurship intention in both countries. As a result, a high level of entrepreneurship intention is associated with a high technological creativity level. Previous research also shows creativity as having a statistically significant and positive correlation with entrepreneurship intention (Fillis & Rentschler, 2010; Zampetakis et al., 2011; Hayton & Cholakova, 2012; Antonio, Lanawati, Wiriana & Christina, 2014). Thus, this finding provides grounds for testing the predictive ability of technological creativity on entrepreneurship intentions, in the quest to find ways through which total entrepreneurial activity amongst the youth in both Zimbabwe and South Africa can be increased.

Confirmation of the positive linkages set the scene for the testing of the joint effects of entrepreneurship education and technological creativity on entrepreneurship intention. However, control variables had to be factored in the equation. Literature suggests that some demographic and psychological factors can exert an influence on respondents' entrepreneurship intention. Thus, a number of demographic factors that include age group, gender, marital status, current and previous employment status and previous exposure, were tested for their correlation with entrepreneurship intention, using Spearman's correlation test. As alluded to earlier, this non-parametric test was considered appropriate because the data set did not satisfy the condition for normality which is required for parametric tests. At the same time, the psychological factors, need for achievement and risk taking propensity, were also tested for any correlations with entrepreneurship intention locus of control. In order to do so, some demographic data which were not in scale format were dummy coded to allow the proposed tests to

be undertaken. This was done to transform the categorical variables into a continuous scale format that is appropriate for the Spearman's correlation test. The results of the correlation tests are presented in Table 7.21.

Table 7.21 EI versus demographic and psychological factors

Country of residence	Variables	Entrepreneurial intention	
		Correlation	P-value
Zimbabwe	Gender	0.026	0.752
	Age	0.011	0.888
	Marital status	0.094	0.245
	Highest qualification level	0.072	0.373
	Current field of study	0.073	0.367
	Psychological factors (Need for achievement, Locus of control and risk-taking propensity)	0.344	0.000
South Africa	Gender	-0.247	0.005
	Age	0.055	0.531
	Marital status	0.062	0.485
	Highest qualification level	0.005	0.958
	Current field of study	0.077	0.383
	Psychological factors (Need for achievement, locus of control and risk-taking propensity)	0.351	0.000

As noted in Table 7.21, only psychological factors had a significant correlation with entrepreneurship intention in the Zimbabwean sample, while gender and psychological factors had a significant correlation with entrepreneurship intention in the South African sample. Therefore, the regression equations which had entrepreneurship intention as a dependent variable, EI+TC as independent variables, used different control factors for the two samples. For the Zimbabwean sample, psychological factors were the only control factors, while gender and psychological factors were controlled for in the South Africa sample. Upon confirming the correlation test results, separate regression equations were modelled for the two country groups.

For the Zimbabwean group, entrepreneurship intention was set up as the dependent variable, and entrepreneurship education and technological creativity as independent

variables. In the same model, psychological variables were factored in as control variable since they had been ascertained to have a positive correlation with entrepreneurship intention. This model was constructed in order to determine if entrepreneurship education and technological creativity had any impact on entrepreneurship intention. The model was tested using hierarchical regression analysis. The results are reported in Table 7.22.

Table 7.22 Summary of regression analysis test results (Zimbabwe)

Model Summary											
Country of residence	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	
Zimbabwe	1	.248a	0.062	0.055	4.99271	0.062	9.778	1	149	0.002	
	2	.281b	0.079	0.06	4.98052	0.017	1.365	2	147	0.259	
a. Predictors: (Constant), PsychologicalFactors											
b. Predictors: (Constant), PsychologicalFactors, Total EE, Total TC											
Coefficients(a)											
Country of residence	Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics			
			B	Std. Error	Beta	t	Sig.	Tolerance	VIF		
Zimbabwe	1	(Constant)	15.008	3.307		4.538	0				
		Psychological Factors	0.138	0.044	0.248	3.127	0.002	1	1		
	2	(Constant)	12.985	3.597		3.61	0				
		Psychological Factors	0.098	0.057	0.176	1.724	0.087	0.605	1.654		
		TotalEE	0.225	0.141	0.148	1.598	0.112	0.733	1.364		
TotalTC	0.003	0.071	0.004	0.042	0.967	0.63	1.588				
a. Dependent Variable: Total EI											

A two stage hierarchical multiple regression analysis was conducted with entrepreneurship intention as the dependent variable. Psychological factors were entered as independent variables at stage one of the equation, which is Model 1 of the regression model to control for psychological factor-influenced responding. TC+EE were then also entered as independent variables in stage two, which is Model 2.

Results for Model 1 for the Zimbabwean sample demonstrate that psychological factors, on their own, had a statistically significant (Sig. F Change value=0.002) but weak predictive effect on entrepreneurship intention (Adjusted R Square=0.056). This means that they directly explained 6 % of the variance in entrepreneurship intention.

Even though the Theory of Planned Behaviour discounts the direct effect of other psychological factors on entrepreneurship intentions, apart from the proximate ones mentioned in the theory, some literature directly links the need for achievement, locus of control and risk-taking propensity to entrepreneurial intentions and behaviour (Hisrich & Peters, 2002). For instance, Caliendo, Fossen and Kritikos' (2011) study on the effects of personality characteristics on the intention to engage and stay self-employed suggest that risk attitudes and locus of control have strong and direct effects on the need to be self-employed. In this case, the finding of the current study confirms the foundations of trait-based theories of entrepreneurship and thus validates the inclusion of psychological traits as control variables in the regression model. However, it contradicts findings by Ferreira et al., (2012) whose survey of secondary students in Portugal reveals that amongst the three variables mentioned in the current study, only the need for achievement had predictive impact on entrepreneurship intention. The unfolding scenarios therefore suggest that the direct effects of psychological factors on entrepreneurship intentions are contested and therefore need further validation.

Model 2 reveals that the introduction of entrepreneurship education and technological creativity into the equation, in addition to psychological factors, did not add any significant predictive power to the model as demonstrated by the non-significant effect F-value (Sig. F change value of 0.259). An examination of the *p*-values of the standardised coefficients for the individual predictor variables shows that all the predictors had no statistically significant *p*-values (psychological factors= 0.087, EE=0.112, TC 0.967). From the results of the regression analysis, it can be concluded TC+EE did not have a statistically significant and direct predictive influence on entrepreneurship intention for the Zimbabwean sample. The findings are inconsistent with previous studies on the direct impact of creativity on entrepreneurship intention (Zampetakis & Moustakis, 2006; Zampetakis, Gotsi & Andriopoulos, 2011; Nasiru, Yeat, & Bhatti, 2015; Rosly, Junid, Faizah, Lajin & Rahim, 2015) and entrepreneurship education (Abduh, 2007; Nabi & Holden, 2011; Ahmad, 2013; Zhang, Duysters & Cloudt, 2014) which have preponderantly affirmed that these factors had a prognostic effect on entrepreneurship intention. A possible explanation for the inconsistency may

be the different contexts, including the different types of entrepreneurship education course characteristics to which the respondents were exposed to.

A separate regression model was also set-up for the South Africa sample. This was informed by the results of the Spearman's test results for the group. The fact that gender, in addition to EE+TC and psychological factors had statistically significant positive correlations with entrepreneurship intention, lead to the use of a three stage hierarchical regression model in the assessment of the effect of TC+EE on entrepreneurship intention. Gender was entered as the only independent variable in Model 1, with psychological factors were added in Model 2 and TC+EE introduced in model 3. This was done to isolate the effects of the predictor variables on the dependent variables from those of control variables. The results are shown in Table 7.23.

Table 7.23 Summary of regression analysis test results (South Africa)

		Model Summary									
Country of residence	Model	R	R Square	Adjusted R Square	Std. Error	R Square Change	Change Statistics				
							F Change	df1	df2	Sig. F Change	
South Africa	1	.270a	0.073	0.064	0.064	5.29168	0.073	7.734	1	98	0.006
	2	.296b	0.087	0.069	0.069	5.2779	0.014	1.513	1	97	0.222
	3	.314c	0.098	0.06	0.06	5.30119	0.011	0.575	2	95	0.565
a. Predictors: (Constant), Gender2											
b. Predictors: (Constant), Gender2, PsychologicalFactors											
c. Predictors: (Constant), Gender2, PsychologicalFactors, TotalEE, TotalTC											
Coefficients(a)											
Country of residence	Model	Unstandardized Coefficients			Standardized Coefficients			Collinearity Statistics			
		B	Std. Error		Beta	t	Sig.	Tolerance	VIF		
South Africa	1	(Constant)	23.593	0.689		34.247	0				
		Gender2	2.992	1.076	0.27	2.781	0.006	1	1		
	2	(Constant)	18.11	4.51		4.015	0				
		Gender2	2.931	1.074	0.265	2.729	0.008	0.998	1.002		
		Psychologica	0.073	0.06	0.119	1.23	0.222	0.998	1.002		
	3	(Constant)	18.424	4.939		3.73	0				
		Gender2	2.893	1.117	0.262	2.591	0.011	0.932	1.073		
		Psychologica	0.088	0.074	0.144	1.187	0.238	0.647	1.546		
		TotalEE	0.136	0.158	0.096	0.862	0.391	0.773	1.294		
		TotalTC	-0.091	0.109	-0.104	-0.831	0.408	0.609	1.642		

The results reflected in Table 7.23 show that in Model 1, gender significantly and directly predicted entrepreneurship intention as shown by the probability value (p -value=0.006) for the F-change. The predictive power was however weak, with an adjusted R square of 0.064. The introduction of psychological factors in Model 2 did

not bring any statistically significant change to the predictive power of the model (Sig. F Change=0.222). Therefore, any recorded change in adjusted R Square, arising from the introduction of psychological factors, was spurious. In Model 3, the introduction of TC+EE in addition to the earlier introduced variables also did not bring any statistically significant changes to the model (Sig. F Change=0.565). The reason for the absence of a significant predictive relationship between EE+TC and entrepreneurship intention is not clear. However, the outcome underscores the relevance of suggestions by scholars, such as Liñán et al. (2011), Knabe (2012) and Ajzen (2015), that even though intention levels may have positive associative linkages with several endogenous and exogenous factors, such factors do not exercise a direct predictive influence on the intentions. Instead, their impact is mediated by attitude, subjective norms and perceived behavioural control. This may be a plausible explanation for the outcome of this study since the same set of predictor variables that did not significantly predict entrepreneurship intention had significant prognostic effect on the antecedents of entrepreneurship intention.

To assess the contribution of the independent variables in Model 3, the study examined the standardised coefficients of the independent variables. Table 33 illustrates that only gender, a control variable, had a statistically significant effect (p -value=0.011, β =0.119) on the dependent variable entrepreneurship intention. The hegemony of gender as a predictor of entrepreneurship intention in the current study is inconsistent with findings from some recent studies which question the direct effects of demographic variables on entrepreneurship intention (Malebana, 2014; Bell & Rock, 2015). However, some studies have proven the significant effect of gender on entrepreneurship intention of respondents (Gupta et al., 2009; Dabic et al., 2012; Shinnar et al., 2012; Strobl et al., 2012). The coefficients for other predictor variables in model 3 are insignificant since their individual p -values are greater than both 0.01 and 0.05. All in all, the proposition that EE+TC directly predicted entrepreneurship intention was not proven with the South Africa sample. Thus, the null hypothesis is supported for the South Africa sample.

Taken together, the results of the multiple regression analysis suggest a failure of the combined influence of entrepreneurship education and technological creativity to directly predict entrepreneurship intention for both the Zimbabwe and South Africa samples. These discouraging results, can, from a practical perspective, possibly be attributed to a number of methodological factors which include:

- Non-normality of data owing to none response to some questions.
- Perceptibly compromised sample size.

The results should however be interpreted with caution and a knee-jerk reaction be avoided. At the inception of the study, the researcher had proposed that combining entrepreneurship education and technological creativity would have a synergistic effect on entrepreneurship intention. This came as a contribution to the discourse on finding alternative means to enhance the quantity and quality of potential entrepreneurs in both Zimbabwe and South Africa, countries beset with high youth unemployment and under employment rates. For reasons expounded in the following paragraph, the researcher still maintains that entrepreneurship education and technological creativity impact collectively on entrepreneurship intention.

A focus on to the hypotheses that tested the prognostic effect of EE+TC on entrepreneurship intention shows that the most salient results of this study can be observed. What is interesting in the results of those hypotheses tests is that EE+TC significantly predicted each of the proximal antecedents of entrepreneurship intention in both the Zimbabwe and South Africa samples. The results support the logic of the Theory of Planned Behaviour and numerous other entrepreneurship intention based studies that proclaim that only attitude, subjective norms and perceived behavioural control have direct predictive effect on entrepreneurship intention of an individual (Fini, Grimaldi, Marzocchi & Sobrero, 2009; Schwarz, Wdowiak, Almer-Jarz & Breiteneker, 2009; Engle et al., 2010; Fretschner & Weber, 2013). All other factors, endogenous or exogenous, exert their influence on entrepreneurship intention through the three proximal antecedents. This conclusion is even vouched for by findings from some studies from non-entrepreneurship research fields (Knabe, 2012; Srivastava, 2013). Hence, with this observation in mind, the significance of entrepreneurship education

and technological creativity in shaping the entrepreneurship intention of students should not be undermined.

Therefore, the empirical findings reported in this chapter suggest that the majority of the respondents from the selected tertiary education institutions in both Zimbabwe and South Africa intend to engage in entrepreneurial activity in the near future. Furthermore, the result of the Mann-Whitney U test conducted on the basis of the data collected suggests that the levels of entrepreneurship intention of the respondents from the two countries are not significantly different. Country-based variations can be observed from the correlation of entrepreneurship education and technological creativity with the three antecedents. In the case of the Zimbabwean group, both entrepreneurship education and technological creativity have significant positive correlations with all proximal antecedents of entrepreneurship intention that ranged from weak to moderate. For the South Africa sample, only technological creativity reported significant positive correlations with all the three antecedents of entrepreneurship intention. Entrepreneurship education showed significant correlations with attitude towards entrepreneurship and perceived behavioural control, while a non-significant result was recorded with subjective norms.

An analysis of the correlation between each of the three immediate determinants of entrepreneurship intention and actual entrepreneurship intention itself reveals varied results. For the Zimbabwean sample, the three antecedents of entrepreneurship intention had positive and significant correlations with entrepreneurship intention that range in strength from moderate to strong. Strong, positive and significant correlations were recorded for the attitude towards entrepreneurship-entrepreneurship intention and perceived behavioural control-entrepreneurship intention pairs in the case of the South Africa group. A regression analysis test which the predictive ability of attitude towards entrepreneurship, subjective norms and perceived behavioural control on entrepreneurship intention reveals *R*-squared values of 0.39 and 0.55 for South Africa and Zimbabwe, respectively, thus indicating moderate to strong predictive ability. The contribution of subjective norms to the equations is non-significant for both the Zimbabwe and South Africa samples. Lastly, multiple regression tests proved that

entrepreneurship education and technological creativity do not have a significant direct influence on the entrepreneurship intention of students.

7.6 SUMMARY

This chapter addressed the research objectives by testing the various hypotheses formulated. The data collected was analysed and interpreted, and the findings discussed in view of the research objectives. The next chapter addresses the conclusions, recommendations, contributions and limitations of the study.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 INTRODUCTION

The previous chapter outlined, analysed and discussed the study findings with a view to provide an overarching picture of the relationships between technological creativity, entrepreneurship education and entrepreneurship intentions at two tertiary educational institutions in South Africa and Zimbabwe. The study findings show that a majority of the respondents who participated in the study intended to engage in entrepreneurship in the near future. In addition, the findings revealed that entrepreneurship education and technological creativity did not have a direct influence on entrepreneurship intentions of the respondents. Instead, the two independent variables had an indirect impact through three factors, which are attitudes towards entrepreneurship, subjective norms and perceived behavioural control. Lastly, the results from the study proved the collective predictive effect of attitude towards entrepreneurship, subjective norms and perceived behavioural control on entrepreneurship, thus validating Ajzen's model of planned behaviour. This chapter, however, presents the conclusion and recommendations of the study on the basis of the research purpose and questions. The research questions presented in section 8.2 and their corresponding hypotheses, where applicable, were tested in order to arrive at the conclusion and recommendations.

8.2 CONCLUSIONS

The findings from the Zimbabwean and South African samples are considered in this section, their hypothesis tested and respective conclusions provided.

8.2.1 Research question 1

Do the students exposed to entrepreneurship education at particular tertiary institutions in South Africa and Zimbabwe intend to engage in entrepreneurship after completing their studies?

Percentage analyses were performed to resolve this research question. The average percentages of Zimbabwe and South African student respondents who intended to engage in entrepreneurship upon completing their current studies were 80.5% and 72% respectively. This percentage score indicates that respondents from the Zimbabwean sample were more intent on embarking on entrepreneurial careers in the near future than those from the South African sample. It can be concluded from these findings that most of the respondents from both countries intended to engage in entrepreneurship on completing their studies. This conclusion corroborates those of Dabale and Masese (2014), and Malebana and Swanepoel (2015) in affirming the high entrepreneurship intention levels amongst Zimbabwean and South African college students respectively.

It is therefore concluded that the majority of students who participated in the current study and were exposed to entrepreneurship education at particular tertiary institutions in South Africa and Zimbabwe intended to engage in entrepreneurship after completing their studies.

8.2.2 Research question 2

Are there any statistically significant differences in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions?

To explore this research question, the following hypotheses were tested:

H₀1 There is no statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

H_a1 There is a statistically significant difference in the entrepreneurship intention levels of students exposed to entrepreneurship education at particular South African and Zimbabwean tertiary institutions.

The Mann-Whitney U test results revealed that there were no statistically significant differences ($U = 11130.5$, $z = -1.64$, $p = 0.102$) in the entrepreneurship intention levels of respondents from the Zimbabwean and South African tertiary institutions.

Accordingly, the null hypothesis: *There is no statistically significant difference in the entrepreneurship intention levels of South African and Zimbabwean tertiary education students exposed to entrepreneurship education* is supported. This finding is rather curious as it is inconsistent with findings by the Global Entrepreneurship Monitor whose annual reports have consistently reported very low levels of entrepreneurship intentions for South Africans over the years (Herrington & Kelley, 2012b; Schott et al., 2015; Singer et al., 2015).

It is therefore concluded that there is no statistically significant difference in the entrepreneurship intention levels of particular South African and Zimbabwean tertiary education students exposed to entrepreneurship education.

8.2.3 Research question 3

Are there any significant relationships between student exposure to entrepreneurship education (EE) and the immediate determinants of entrepreneurial intentions (EI) i.e. attitudes, subjective norms, perceived behavioural control on entrepreneurship?

To explore this research question, the following hypotheses were tested:

H₀₂ There are no significant relationships between particular Zimbabwean and South African students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

H_{a2} There are significant relationships between particular Zimbabwean and South African students' exposure to entrepreneurship education and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control).

Statistically significant and positive correlations were found between Zimbabwean students' exposure to entrepreneurship education on the one hand, and all three determinants of entrepreneurship intentions namely attitude towards entrepreneurship ($p=0.000$, $r=0.313$), subjective norms ($p=0.000$, $r=0.329$) and perceived on the other behavioural control ($p=0.000$, $r=0.425$) on the other. The correlation was strongest

between exposure to entrepreneurship education and perceived behavioural control. This finding supports Rambe et al.,'s (2015) view that entrepreneurship education has a linkage with the three proximate antecedents of entrepreneurship intentions even though the degree of the strength of correlation amongst variables may differ. This means that students' exposure to entrepreneurship education is positively associated with the antecedents of entrepreneurship intention. Therefore, the Zimbabwean sample's findings do not support the null hypothesis: *There are no statistically significant relationships between students' exposure to entrepreneurship education and the three determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control)*. In the case of the South African sample, only attitude towards entrepreneurship and perceived behavioural control had significant correlations with entrepreneurship intention ($p=0.000$, $r=0.304$ and $p=0.000$, $r=0.386$ respectively). However, a non-significant correlation existed between subjective norms and entrepreneurship intention ($p=0.113$, $r=0.145$). This means the null hypothesis is not supported in the case of the entrepreneurship intention-attitude towards entrepreneurship and the entrepreneurship intention-perceived behavioural control relationships, but is supported for the entrepreneurship intention-subjective norms relationship.

It is concluded that there are positive and statistically significant relationships between Zimbabwean students' exposure to entrepreneurship education and the three immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control). For the South African students, statistically significant relationships exist between only two pairs of relationships i.e. exposure to entrepreneurship education-attitude towards entrepreneurship and exposure to entrepreneurship education-perceived behavioural control.

8.2.4 Research question 4

Are there any significant relationships between technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions?

To address this research question, the following hypotheses were tested:

H₀₃ There are no statistically significant relationships between Zimbabwean and South African students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

H_{a3}. There are statistically significant relationships between students' technological creativity levels and the immediate determinants of entrepreneurship intentions (i.e. their attitudes towards entrepreneurship, subjective norms and perceived behavioural control).

Positive correlations were observed in the relationships between Zimbabwean and South African students' technological creativity on one hand and all proposed antecedents of entrepreneurship intention i.e. attitude towards entrepreneurship ($p=0.000$, $r=0.219$ and $p=0.002$, $r=0.277$ respectively), subjective norms ($p=0.007$, $r=0.307$ and $p=0.007$, $r=0.308$ respectively) and perceived behavioural control ($p=0.000$, $r=0.551$ and $p=0.000$, $r=0.360$ respectively) on the other. Even though no study in the sub-Saharan African context has attempted to correlate technological creativity with the antecedents of entrepreneurship intentions, the study enriches the small number of studies from other contexts that have linked creativity to entrepreneurship intentions (Zampetakis & Moustakis, 2006; Zampetakis, 2008; Zampetakis, Gotsi, & Andriopoulos, 2011). The strongest correlation was found between technological creativity and perceived behavioural control, followed by technological creativity and attitude towards entrepreneurship, and lastly technological creativity and subjective norms. The null hypotheses: *There are no statistically significant relationships between students' technological creativity levels and the*

immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) are therefore rejected.

The conclusion is that there are positive and statistically significant relationships between technological creativity and the three immediate determinants of entrepreneurship intentions of students at particular South African and Zimbabwean tertiary institutions.

8.2.5 Research question 5

Do entrepreneurship education and technological creativity predict the antecedents of entrepreneurship intention (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions?

For the research question to be addressed, the following hypotheses were tested:

H₀₄ EE+TC do not predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, and perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

H_{a4} EE+TC predict the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) of entrepreneurship students at particular South African and Zimbabwean tertiary institutions.

The results of the hypotheses tests are presented separately for each immediate determinant of entrepreneurship intention in the ensuing sub-section.

8.2.5.1 Effect of EE+TC on attitude towards entrepreneurship

The results of the multiple regression analysis illustrate that entrepreneurship education and technological creativity collectively had a significant but weak prognostic effect on attitude towards entrepreneurship $F(2,151) = 5.63, p = .004, R^2 = 0.07$) for the Zimbabwean sample. However, the contribution of technological creativity

in the equation was not significant. Therefore, it can be concluded that only entrepreneurship education had a significant predictive impact on attitude towards entrepreneurship for the Zimbabwean students. In the case of the South African sample, the results demonstrate that the predictive influence of entrepreneurship education and technological creativity on attitude towards entrepreneurship was not statistically significant when tested at the 5% level $F(2,127) = 2.79$, $p = .065$, $R^2 = 0.04$).

The conclusion is that EE+TC significantly predicted the selected Zimbabwean students' attitude towards entrepreneurship whilst it was non-significant for the South African sample.

8.2.5.2 Effect of EE+TC on subjective norms

The results of the multiple regression analysis show that entrepreneurship education and technological creativity had a significant collective predictive effect on subjective norms for both the Zimbabwean and South Africa sample, ($F(2,151) = 11.58$, $p < .001$, $R^2 = 0.13$ and $F(2,127) = 7.78$, $p < .001$, $R^2 = 0.11$ respectively. These findings give support to Hamidi, Wennberg and Berglund's (2008) observation that individual students undergoing entrepreneurship education, which had high scores on a creativity test and had prior entrepreneurial experiences through friends, family and close relatives had high entrepreneurial intentions.

Therefore, the alternate hypothesis that EE+TC had a predictive influence on subjective norms is supported. It can be concluded that EE+TC predict subjective norms.

The conclusion is that EE+TC had significant predictive influence on the subjective norms of students from particular tertiary institutions in Zimbabwe and South Africa.

8.2.5.3 Effect of EE+TC on perceive behavioural control

The results of the multiple regression analysis demonstrate that entrepreneurship education and technological creativity had a joint predictive effect on perceived behavioural control of students from selected tertiary institutions in Zimbabwe and South Africa $F(2,151) = 45.59, p < .001, R^2 = 0.38$ and $F(2,127) = 12.32, p < .001, R^2 = 0.16$. The results of this test demonstrate where, among the antecedents of entrepreneurship intention, the combination of entrepreneurship education and technological creativity has the strongest effect. The outcome responds to Edwards-Schachter, García-Granero, Sánchez-Barrioluengo, Quesada-Pineda and Amara's (2015:36) call to explore ways to 'develop creativity, innovation and entrepreneurship for achieving more innovative and entrepreneurial societies.' The null hypothesis that EE+TC had no predictive effect on perceived behavioural control is rejected.

contr

8.2.6 Research question 6

To ascertain if the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) influence the actual entrepreneurship intention levels of students, the following research question was explored:

Do the immediate determinants of entrepreneurship intentions (i.e. attitudes, subjective norms, perceived behavioural control) influence the actual entrepreneurship intention levels of students at particular Zimbabwean and South African tertiary education institutions?

To address this research question, the following hypotheses were formulated:

H₀₅ The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) do not influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

H_{a5} The immediate determinants of entrepreneurship intentions (i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control) influence the actual entrepreneurship intentions of entrepreneurship students at particular South African and Zimbabwean tertiary education institutions.

The results of the multiple regression analysis indicate that the model encompassing the three antecedents of entrepreneurship intention i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control had a significant extrapolative effect on actual entrepreneurship intention for both Zimbabwe and South Africa $F(3,150) = 31.67, p < .001, R^2 = 0.39$ and $F(3,126) = 51.46, p < .001, R^2 = 0.55$ respectively). However, if the contributions of the three antecedents are isolated and viewed individually, only attitude towards entrepreneurship and perceived behavioural control had statistically significant direct effect on entrepreneurship intention for both Zimbabwean and South African samples. Therefore, it can be concluded that only attitude towards entrepreneurship and perceived behavioural control had a significant direct effect on entrepreneurship intention for both samples. This study supports the findings of some studies on the African continent which have proven the three antecedents of entrepreneurship intention to be significant predictors of actual entrepreneurship intentions of university students (Ekpoh & Edet, 2011; Gerba, 2012; Hattab, 2014).

The conclusion is that only attitude towards entrepreneurship and perceived behavioural control significantly predict the entrepreneurship intentions of entrepreneurial students at the two particular South African and Zimbabwean tertiary institutions.

8.2.7 Research question 7

To evaluate if EE + TC had direct influence on EI levels of selected tertiary education students' in Zimbabwe and South Africa', the following research question was posed: *Do EE + TC directly predict the EI levels of tertiary Zimbabwean and South African tertiary education students?*

To explore this research question, the following hypotheses were tested:

H₀₆ There is no direct predictive relationship between entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected Zimbabwean and South African students, controlling for demographic and psychological factors.

H_{a6} There is a direct predictive relationship between entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of selected Zimbabwean and South African students, controlling for demographic and psychological factors.

It was proposed in the introductory chapter that TC+EE would have an enhanced direct effect on the entrepreneurship intentions of students than when the two independent variables were considered separately. However, the multiple linear regression analysis performed on the proposed model for both the Zimbabwean and South African sample did not significantly prove that TC+EE had a better predictive ability on entrepreneurship intentions than technological creativity and entrepreneurship education considered separately. Therefore, the null hypothesis, *There is no predictive relationship between entrepreneurship education (EE) + technological creativity (TC) and entrepreneurship intentions of students, controlling for demographic and psychological factors*, is supported and hence accepted. Even though the outcome was contrary to expectations, the results confirm what the Theory of Planned Behaviour suggests that only attitude towards entrepreneurship, subjective norms and perceived behavioural control have a direct effect on entrepreneurship intentions. Thus, all other factors apart from these three will have an indirect impact through the three antecedents (Ajzen, 1991).

It is concluded that EE + TC do not have a direct influence on students' entrepreneurship intention levels, after controlling for demographic and psychological variables.

8.3 POLICY IMPLICATIONS AND RECOMMENDATIONS FOR PRACTICE

Given the socio-economic significance of entrepreneurship in various contexts, the common theme driving this study was to find ways to enhance the number, cognitive

relevance and quality of prospective entrepreneurs with entrepreneurial inclinations. Thus, it was proposed that combining exposure to entrepreneurship education and stimulating technological creativity would enhance the entrepreneurship intentions of tertiary students in Zimbabwe and South Africa. While a statistically significant direct influence was not proven, indirect ones were proven in samples from both countries where EE+TC had significant predictive influences on two antecedents of entrepreneurship intention, which are attitude towards entrepreneurship and perceived behavioural control. Cognisant of the importance of entrepreneurship and entrepreneurship education to both individual and society's growth, the researcher makes the following recommendations for policy and practice:

8.3.1 Recommendations for policy

8.3.1.1 Improve the entrepreneurship support framework

Firstly, the findings of the study prove that the majority of the respondents, all who had received entrepreneurship education, intended to engage in entrepreneurial activity in the near future. This is encouraging to policy makers in Zimbabwe and South African given the often expressed need for more entrepreneurs in the face of high rates of youth unemployment prevailing in the two countries. However, there is a need for comprehensive support strategies for potential entrepreneurs to ensure that the expressed entrepreneurship intentions are converted to the more economically valuable economic activity. Therefore, national governments and other stakeholders in both Zimbabwe and South Africa should take steps to augment educational and non-educational support for entrepreneurial activities.

To elaborate on the preceding exposition, more substantive initiatives such as the South African Government's Youth Enterprise Development Strategy 2013-2023, which is an initiative by the Department of Trade and Industry to promote youth entrepreneurship, should be encouraged so as to enhance the conversion rate of youth entrepreneurship intentions into actual entrepreneurial activity. The advantages of this initiative lie in its categorisation of its target population into clusters of youths in school, considering career options, out of school and those undertaking further education, entering workforce and looking for employment, and lastly those employed

but considering other options. This segmentation of the targeted youth is a good first step in the efforts to promote entrepreneurship as it facilitates the customisation of intervention measures to the needs of a particular youths' category. Arguably, this is hypothetically effective when compared to the blanket approach adopted by the Zimbabwean government.

8.3.1.2 Business incubators for tertiary students and other school-leavers

The launching of new business ventures is fraught with challenges and these are felt more by the youth who are of limited economic means. Thus, in the absence of measures that ameliorate the existence of the myriad of challenges, it would be helpful to the promotion of more youth entrepreneurship entrepreneurial activity if both the national governments of Zimbabwe and South Africa, in collaboration with industry and educational institutions, actively initiated comprehensive business incubator systems where interested youths with viable business ideas are assisted with seed-funding, business management skills training, affordable business premises and other technical business support. The *National Business Incubation Association* proclaims that 73% of business incubators in the United States work in partnership with institutions of higher learning, developmental agencies and government departments (National Business Incubation Association, 2012). This form of business support is not common in the Zimbabwean context notwithstanding the government's grandstanding about promoting youth economic empowerment and entrepreneurship. The business incubator model has achieved notable success in India, an emerging economy, where incubated businesses attain up to 90 % survival rates with the Trivandrum Technopark creating over 4,000 jobs (Sharma, Shukla & Joshi, 2014).

8.3.1.3 Compulsory EE at tertiary education institutions

Given that the results of the study demonstrate the capability of entrepreneurship education and technological creativity to influence students' attitudes to entrepreneurship and belief in their own capabilities to launch successful business ventures; it is recommended that the Zimbabwean and South African governments, in conjunction with tertiary education institutions in the two countries, adopt a policy of compulsory entrepreneurship education. However, such courses should be restricted

to short durations and introductory levels with the aim being only to assist new students to decide whether or not to pursue entrepreneurial careers, in accordance to what Weber, Graevenitz and Harhoff (2009:31) term 'sorting'. Arguably, entrepreneurship education and training would be more effective if more resource commitments are made to those students, who after the initial introductory course discover that they are more inclined towards an entrepreneurship career and opt for further advanced training in the area. According to (Weber, 2012), it is a waste of resources to invest in the compulsory and long-term entrepreneurship training of students who are not yet decided on the career paths they want to follow and who may end up pursuing other ends instead. Hence, while governments may want to boost entrepreneurial activity by giving training to as many individuals as possible, care should be taken to prevent a waste of resources through a long term commitment to training of a large number of students amongst whom only a minority may end up pursuing entrepreneurship careers.

8.3.2 Recommendations for practice

8.3.2.1 Infusing TC into EE programmes

The results of the study proved that entrepreneurship education and technological creativity are correlated and have a predictive effect on some critical antecedents of entrepreneurship intention. Thus, most students who had exposure in entrepreneurship education and had high technological creativity levels also had higher levels scores on the key antecedents of entrepreneurship, thus suggesting a positive indirect positive effect on actual entrepreneurship intention. Therefore, to unleash the entrepreneurship intentions and full entrepreneurial talents, institutions of higher learning should offer entrepreneurship education and at the same time seek to nurture the technological creativity of students.

Even though the findings of the current study are very much preliminary, there is substantial evidence in literature that confirms the need for creative and innovative skills, particularly in the contemporary business environment where community and market needs are always changing and require new forms of value to satisfy them. Hence, individuals and teams with the capabilities to see and connect market

opportunities, which are also quick to come up with novel products, processes, and ideas that create value which satisfies market needs are in demand. The researcher concurs with Zampetakis, Gotsi and Andriopoulos' (2011) view that creativity, particularly technological creativity, should be intertwined with any business-oriented instructional programme so as to enhance the potency and relevancy of its outcomes to the contemporary economic environment. According to Kuratko (2005:591), "...creativity is the future of business schools and it should begin to move into a leadership role". Thus, there is a need to design entrepreneurial education programmes that give primacy to the development of cognitive-based capabilities in order to enhance students' attitudes towards entrepreneurship and their self-efficacy. The researcher recommends that technological creativity be systematically introduced into entrepreneurship education programmes through two main ways, which are by modifying existing pedagogical approaches and reforming the prevailing examination systems which test for students' knowledge to new formats that can assess divergent and convergent thinking.

Entrepreneurship educators need to reform their pedagogical approach in order to fine-tune students for the reality of starting new ventures in a rapidly changing and increasingly technology-driven environment (Edelman, Manolova & Brush, 2008). Thus, teaching and learning methods that enhance active participation and experiential learning by the student should be deliberately adopted since traditional teacher centred methods have been found to stifle student creativity and innovative behaviour (Baumol, Litan, Schramm & Strom, 2011). Some studies inside and outside the entrepreneurship education context confirm the effectiveness of pedagogical methods that allow active participation by students in the learning process, allowing them to experiment with ideas and take control of the process in stimulating student creativity and innovation (Jeffrey & Craft, 2004; Heinonen, Hytti & Stenholm, 2011; Schmidt, Soper & Facca, 2012). After all, the process of business opportunity search and idea generation are creative processes (Shane & Nicolaou, 2015).

There is also need to revise the assessment systems of entrepreneurship students at higher learning institutions once technological creativity is incorporated in the

entrepreneurship curriculum. Thus, evaluation systems should go beyond testing knowledge and also test practical abilities, originality, inventiveness, flexible and problem-solving aspects, which literature revealed are associated with technological creativity. Therefore, practical projects such as business simulation games, generation of viable business ideas and business plan preparation should form part of the evaluation process.

8.4 IMPLICATIONS FOR FUTURE RESEARCH

Even though the current study revealed some interesting and important findings for entrepreneurship scholars, educators, policymakers, and other interested stakeholders, it is recommended that further studies be undertaken. Firstly, it is important to make the study more comprehensive by including larger sample sizes and several participating institutions across the two countries. The two samples are institutionally based, which means that they cannot be readily generalised to students from institutions of higher learning with a different curriculum thrust from the one offered at the two participating institutions. For this reason, it is important for future studies to encompass students from tertiary education institutions with a non-STEM thrust.

In addition, more robust studies that uses an experimental research design and more powerful statistical testing methods, such as structural equation modelling, need to be undertaken in order to validate the findings of the current study which draws on the Theory of Planned Behaviour. As opposed to other weaker research designs that are based on self-reporting, an experimental research design is more revelatory to theory-testing hypotheses as it allows for causal relationships to be reliably and validly tested.

It would also be interesting to evaluate the impact of entrepreneurship education on entrepreneurship intention by comparing students from voluntary and compulsory classes in the same regional context as the current study since such studies are lacking in the current literature. The groups of South African and Zimbabwean respondents who took part in this study had their exposure to entrepreneurship education owing to its state as a requisite condition for the respective programmes of

study they were pursuing. Hence, there is need for further studies which compare results from scenarios where entrepreneurship education is given as a compulsory subject from those where the same is given as an elective. The impact of entrepreneurship education on entrepreneurial intentions of students in the two different programmes may not be the same.

8.5 CONTRIBUTION TO KNOWLEDGE

The study makes some contributions to the entrepreneurship intentions theory in a number of ways. It validates the application of the original theory of planned behaviour in the entrepreneurship context and introduces a novel combination of factors that influence the entrepreneurship intentions of students. These issues are dealt with below.

8.5.1 Validation of model and widening of context applicability

While numerous studies have used the Theory of Planned Behaviour as a guiding framework to assess entrepreneurship intentions at institutions of higher learning in Southern Africa, none have applied it in a comparative study encompassing students sampled from more than one tertiary education institution in different countries within the sub-region. The outcome of the study, which proved the predictive effect of attitude towards entrepreneurship, subjective norms and perceived behavioural control on entrepreneurship intention, strengthens the credibility of the theory as an explanatory tool for the development of entrepreneurship intentions. It also proved its applicability to diverse contexts given that its first application in a previously untested area produced some statistically significant results. The current study is a response to Fayolle and Liñán's (2014) call to consolidate entrepreneurship intention theories by testing them in diverse contexts and by means of samples of would-be entrepreneurs.

8.5.2 Introduction of new variables to the model

Significantly, the study has enriched our understanding of the entrepreneurship intention theory by considering, for the first time, the combined effect of technological creativity, a novel construct, and entrepreneurship education on the entrepreneurship intention tertiary education students in a two-country context. Even though the

technological creativity concept has been researched in other fields of study (Magee, 2005; Tsai & Wang, 2011; Lin et al., 2013; Kačerauskas, 2016), it is relatively new to entrepreneurship intention research. The concept encompasses technology which relates to software, hardware or ideas relevant to practical problem solving within society and creativity which is associated with imagination, inventiveness and original thinking (Ming, 2011; Wei, 2012; Aminullah, Fizzanty, Kusnandar & Wijayanti, 2015). In the end, the researcher defined technological creativity as a predisposition towards experimenting with new ideas and ways of doing things in an effort to generate scientific, economic and cultural solutions. While entrepreneurship theorists such as Schumpeter (2000) and Kirzner (1999) acknowledge the economic value locked in the creativity of entrepreneurs, the contemporary economic environment requires entrepreneurs who possess a form of creativity that is more reflective of modern-day technology-driven economies. As a result, technological creativity was designed for testing in the current study. Although the empirical study did not confirm a direct predictive effect of technological creativity and entrepreneurship education on entrepreneurship intention, it partially substantiated the proposed conceptual model by proving that the two independent variables exerted some influence on entrepreneurship intention through the three proximal antecedents i.e. attitude towards entrepreneurship, subjective norms and perceived behavioural control.

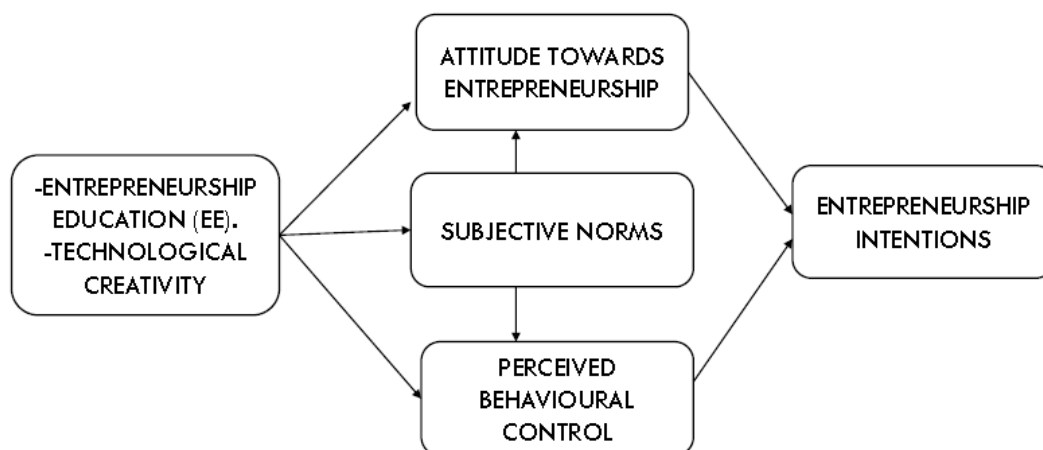


Figure 7.7 Revised model of hypothesised relationships

Thus, it provides theoretical guidelines for entrepreneurship education practitioners on the areas around which pedagogical efforts should focus. Hence, following the findings of the study, a revised framework is presented in Figure 7.7.

Figure 7.7 illustrates the conclusions from the study by removing the direct effect path of EE+TC on entrepreneurship intention which was initially proposed in the conceptual model. At the same time, the direct effect of subjective norms on entrepreneurship intention has been discounted. Instead, the revised model suggests that the subjective norms construct indirectly influences entrepreneurship intention through attitude towards entrepreneurship and perceived behavioural control, hence corroborating what was observed in literature.

8.6 LIMITATIONS

The study has a few shortcomings. First, being cross-sectional and exploratory in nature, the findings from the study can be enriched if further studies of a longitudinal nature and the employment of a more robust research design are conducted.

In addition, the focus was restricted to only two institutions. Comprehensive results could have been obtained from using a number of higher education institutions with different curriculum inclinations from those which participated in this study. To clarify this point, it is noteworthy that the selected institutions for the current study have a bias towards science, technology, engineering and mathematics programme offerings. Thus, this could have exerted some contextual bias to the responses derived from the respondents as some previous studies have demonstrated. Hence, richer findings can be derived if diverse institutions are used as sources of study respondents.

8.7 SUMMARY

This chapter outlined the conclusions drawn from the findings of this study. Being exploratory in nature, the study adds to our understanding of the factors that influence entrepreneurship intentions as nations try to find ways to build a steady supply of future entrepreneurs who possess the necessary skills and mindsets for modern economies.

Recommendations for practice and further research were also made. It is expected that higher education institutions in Zimbabwe and South Africa will benefit from the suggestions made as they make efforts to groom pipeline entrepreneurs.

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