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**THE RELATIONSHIP BETWEEN PERCEIVED  
EFFECTIVE ENTREPRENEURSHIP EDUCATION AND  
ENTREPRENEURIAL INTENTION: THE ROLE OF  
PERCEPTION OF UNIVERSITY SUPPORT, PERCEIVED  
CREATIVITY DISPOSITION AND ENTREPRENEURIAL  
PASSION**



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**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA  
November 2015**

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PERCEIVED CREATIVITY DISPOSITION AND ENTREPRENEURIAL  
PASSION**



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**Thesis Submitted to  
School of Business Management,  
Universiti Utara Malaysia,  
in Fulfilment of the Requirement for the Degree of Doctor of Philosophy**

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## ABSTRACT

Entrepreneurship has led to the ever increasing and continuous growing field of entrepreneurship education. However, there are growing concerns about the effectiveness of the programme in forming entrepreneurial intention and the ultimate advancement of enterprising behaviour. Hence, this study investigated the relationship between perceived effective entrepreneurship education and entrepreneurial intention, while considering the role of perception of university support, perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding a business venture. To validate the model, data from 595 university students were analysed using the Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings showed that all the hypothesised direct relationships were supported except for the relationship between perceived effective entrepreneurship education and entrepreneurial intention. Similarly, the hypothesized mediating relationships were supported. In addition, only two hypothesized moderating relationships were supported, but not the moderating effect of perception of university support on perceived effective entrepreneurship education and entrepreneurial passion for founding. Based on the findings, this study contributes theoretically by extending the use of both the theory of planned behaviour and Shapero's entrepreneurial event model framework to increase the understanding of the relationship between entrepreneurship education and entrepreneurial intention. Methodologically, this study contributes by employing the hierarchical modelling using PLS-SEM to explain the relationships developed. In practical terms, the findings provide the stakeholders responsible for entrepreneurship development a better picture of the formation of entrepreneurial intentions, as well as the impact of potential venture initiators' beliefs and perceptions on their intention to commence a business. Overall, it enables the government and the policy-makers to direct thoughts and resources on young adults who are likely to form entrepreneurial intentions, and consequently, create business ventures.

**Keywords:** entrepreneurship education, university support, creativity disposition, entrepreneurial passion, entrepreneurial intention

## ABSTRAK

Keusahawanan telah menjadikan bidang pendidikan keusahawanan semakin berkembang. Walau bagaimanapun, terdapat kebimbangan yang semakin meningkat tentang keberkesanan program ini dalam membentuk niat keusahawanan dan memajukan perlakuan berdaya usaha. Oleh itu, kajian ini menyiasat hubungan antara pendidikan keusahawanan yang berkesan dan niat keusahawanan, dan mempertimbangkan peranan persepsi sokongan universiti, kreativiti peribadi, semangat keusahawanan untuk mencipta, dan semangat keusahawanan untuk penubuhan usaha teroka baharu. Bagi mengesahkan model, data telah dikumpulkan daripada 595 pelajar universiti dan telah dianalisis dengan menggunakan *Partial Least Squares Structural Equation Modelling* (PLS-SEM). Dapatan kajian menunjukkan bahawa semua hubungan langsung yang dihipotesiskan disokong kecuali hubungan antara pendidikan keusahawanan yang berkesan dan niat keusahawanan. Di samping itu, hubungan pengantara yang dihipotesiskan turut disokong. Selain itu, hanya dua hubungan penyederhana yang dihipotesiskan disokong, tetapi bukan kesan penyederhana persepsi sokongan universiti terhadap pendidikan keusahawanan yang berkesan dan semangat keusahawanan untuk penubuhan. Berdasarkan dapatan yang ditunjukkan, kajian ini menyumbang secara teori dengan meluaskan penggunaan kedua-dua teori tingkah laku terancang dan keusahawanan rangka kerja model acara Shapero untuk meningkatkan kefahaman tentang hubungan antara pendidikan keusahawanan dan niat keusahawanan. Dari aspek metodologi pula, kajian ini menyumbang dengan menggunakan model hierarki PLS-SEM untuk menjelaskan hubungan yang dibangunkan. Dari segi praktis, penemuan menawarkan pihak berkepentingan yang bertanggungjawab membangunkan keusahawanan satu gambaran yang lebih baik mengenai pembentukan niat keusahawanan, dan juga kesan kepercayaan dan persepsi bakal usahawan terhadap niat mereka untuk memulakan perniagaan. Secara keseluruhannya, ia membolehkan kerajaan dan pembuat dasar mengajukan fikiran dan sumber kepada golongan muda yang bakal membentuk niat keusahawanan, dan seterusnya memulakan perniagaan.

**Kata kunci:** pendidikan keusahawanan, sokongan universiti, kreativiti peribadi, semangat keusahawanan, niat keusahawanan

## ACKNOWLEDGEMENT

All praises are due to Allaah the lord of Al-Alamin (Mankind), by whose grace and mercy gave me the opportunity to embark on a PhD programme and provided me with the strength to complete the process. May Allaah's mercy and blessings descend on His messenger and our Prophet Muhammad (Sallallahu Alaihi wa sallam), his household, companions and those that follow them righteously till the day of Judgement.

I would like to appreciate and be grateful to my country (Nigeria) and my university (Ahmadu Bello University, Zaria) for the scholarship and study leave granted me to undertake my PhD programme in Malaysia.

My sincere gratitude goes to my humble and able supervisors Dr. Ooi Yeng Keat and Dr. Muhammad Awais Bhatti for their painstaking and excellent supervision of my PhD dissertation. I have learnt a lot by working with you. I am indeed thankful for your enduring patience with me. Many thanks also to my reviewers for their valuable contribution in making this work better.

My Mother! Ma sha Allaah! My heartfelt appreciation goes for your kindness and prayers through my life. May Allaah reward you with the best of rewards.

I am indeed overwhelm and thankful to my loving wife, Hajara Baba Maiturare for her caring, patience, help and prayers to my success. May you be among the women of Jannah. I am also thankful to my children for their prayers and patience. May Allaah bless and protect you and may you be successful in this world and hereafter.

Finally, I am indebted to my relatives, friends and well-wishers through the PhD journey. I have received lots of encouragements and prayers from you, may the Almighty Allaah grant you enormous reward.

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## LIST OF ABBREVIATIONS

NUC	National Universities Commission
ABU	Ahmadu Bello University
ANOVA	Analysis of variance
AVE	Average Variance Extracted
BT-PPP	Business Team Projects Partnership Programme
BUK	Bayero University Kano
CB-SEM	Covariance Based Structural Equation Modelling
CFA	Confirmatory Factor Analysis
CMV	Common Method Variance
CPS	Creative Problem Solving
EEPs	Entrepreneurship Education Programmes
EI	Entrepreneurial Intention
EPF	Entrepreneurial Passion for Founding
EPI	Entrepreneurial Passion for Inventing
$f^2$	Effect Size
GEM	Global Entrepreneurship Monitor
HEIs	Higher Education Institutions
HP	Harmonious Passion
ICF	Identity Centrality for Founding
ICI	Identity Centrality for Inventing
ICT	Information and Communication Technology
IDA	Industrial Development Authority
IPFF	Intense Positive Feeling for Founding
IPFI	Intense Positive Feeling for Inventing
IPL	Polytechnic Institute of Leiria
IRIB	Islamic Republic of Iran Broadcasting
ITEEM	Institut Technologique Européen d'Entrepreneuriat et de Management
MBA	Master of Business Administration
MIT	Massachusetts Institute of Technology
NBS	National Bureau of Statistics
NPIC	National Pingtung Institute of Commerce
OECD	Organisation for Economic Co-operation and Development
OP	Obsessive Passion
OTT	Over-Inclusive Thinking Training
PCD	Perceived Creativity Disposition
PEEE	Perceived Effective Entrepreneurship Education
PLS	Partial Least Squares
PLS-SEM	Partial Least Squares Structural Equation Modelling

Q <sup>2</sup>	Predictive Relevance
R <sup>2</sup>	Coefficient of Determination
SEE	Shapero's Entrepreneurial Event
SPSS	Statistical Package for Social Sciences
TPB	Theory of Planned Behaviour
UDUS	Usman Danfodio University Sokoto
UN	United Nations
UTHM	Universiti Tun Hussein Onn Malaysia
VIF	Variance Inflation Factor
YAA	Young Achievement Australia



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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Entrepreneurship has become a worldwide programme because of its significant contributions to the economy of countries through job creation and generating high employment, innovativeness and creativity, social development and economic growth (Timmons, 1999; Shane & Venkataraman, 2000; Thurik, 2001; Carree & Thurik, 2003; Acs & Audretsch, 2005; Audretsch & Rowley, Baregheh, & Sambrook, 2011, Prakash, Jain, & Chauhan, 2015). Developed countries, such as USA, Japan, and Germany have all enjoyed economic growth due to the presence entrepreneurs (Prakash, Jain, & Chauhan, 2015). Entrepreneurship has a simple meaning of starting a business to a more complex definition involving independence, creativity, innovativeness, initiative, and risk-taking (Bruyat & Julien, 2001). Opportunity identification is, thus, the beginning of entrepreneurship and the procedure is obviously intentional (Wang, Lu, & Millington, 2011).

Moreover, the aspect of entrepreneurial intentions (EI) is necessary to comprehend the entrepreneurial process since it precedes entrepreneurial behaviour (Krueger & Carsrud, 1993; Arendt & Brettel, 2010; Gámez-González, Rondan-Cataluña, Diez-de Castro, & Navarro-Garcia, 2010; Lin, Lin, & Lin, 2010; Zhang & Duan, 2010). Intention is also the



ultimate and closest to exhibiting entrepreneurial behaviour (Shapero & Sokol, 1982; Ajzen, 1991; Robinson & Haynes, 1991; Fitzsimmons & Douglas, 2011; Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011). In general, intention can be seen as a condition of mind tailoring someone's attention towards achieving a specific objective or goal (Vesalainen & Pihkala, 1999), while entrepreneurial intention is seen as individual participation or the intention to initiate business enterprise (Drennan & Renfrow, 2005; Souitaris, Zerbinati, & Al-Laham, 2007b, Fayolle & Liñán, 2014). However, intentions models present a rational and fundamental framework for gaining enhanced knowledge of the entrepreneurial process (Krueger & Carsrud, 1993). Therefore, understanding the factors responsible for creating entrepreneurial intention is valuable in explaining entrepreneurial behaviour (Shane & Venkataraman, 2000).

Given also the realisation of the significant contribution of entrepreneurship to any economy, considerable attention has continually been given to entrepreneurship education (O'Connor, 2013), especially by various governments of countries. This can be observed from the growth and the development of schools curricula, as well as promotion of programmes devoted to entrepreneurship and new venture creation worldwide (Kuratko, 2005; O'Connor, 2013). Hence, higher educational institutions have responded to the mandate asserted by governments in teaching entrepreneurship to develop skills that are necessary for self-employment and in meeting the demand of business sectors that desire individuals with knowledge and requisite skills to fit into the corporate world (Roxas, Cayoca-Panizales, & de Jesus, 2008; Prakash, Jain, & Chauhan, 2015). For many developing countries, however, it is more necessary to develop graduate entrepreneurship

education not only as a means of encouraging venture creation and entrepreneurial development, but also as a basis for national competitiveness and economic development (Nabi & Liñán; 2011, Inci, 2013).

In the phase of development, Nigeria has been rated with among others slow progress in wealth creation and employment generation (Lemo, 2013). The high rate of unemployment in Nigeria has increasingly become worrisome to the national government. It is estimated that about 23.9 per cent which represent about 39 million Nigerians were not gainfully employed (National Bureau of Statistics, 2011). A report by the National Bureau of Statistics (NBS) and the Federal Ministry of Youth Development in Nigeria on National Baseline Youth Survey in 2012 revealed that unemployed Nigerian youths were up to 54 per cent (News Agency of Nigeria, 2013). In addition, the former Finance Minister, Dr Ngozi Okonjo-Iweala, affirmed that an average of 1.8 million young people are out in the labour market yearly, out of which about 250,000 to 300,000 are graduates (Godwin, 2013).

Moreover, the Federal Ministry of Labour and Productivity claimed that the figure of unemployed graduates after National Youth Service Corps had been more than 41%. These graduates, who turned out from higher institutions in large numbers, could end up searching for unavailable government jobs for a number of years (Anyadike, Emeh, & Okechukwu, 2012). This is an indication of weakness of the economy in employing the large number of graduates (Utomi, 2011). Unfortunately the university graduates lack

skill-training that is necessary for job creation and self-employment (Odidi, 2012; Maigida, Saba, & Namkere, 2013).

This situation was reflected in a study conducted by the Nigerian University Commission in 2004 to ascertain the labour market performance among graduates from the country. The result indicated that 44 per cent were rated as average in creativity, while 60 per cent were rated as poor on needed skills regarding entrepreneurial skills, problem-solving, and decision-making, among others. Hence, the university system in the country has been found to be deficient in producing productive, self-actualizing, and creative thinking individuals with the vital entrepreneurial skills to be self-employed (Edukugho, 2012; Odidi, 2012).

All these scenarios are, however, linked to poor government attitude towards entrepreneurship development, lack of enabling environment for entrepreneurship activities, and lack of infrastructure and quality education from the tertiary institutions, among others (Roberts, 2013). With the above concern, the Federal Government of Nigeria directed all higher education regulatory bodies to institute a structure for introducing, developing, and sustaining the culture of entrepreneurship among Nigerian students (Aginam, 2014; Akinboade, 2014). Nonetheless, the need to be self-employed coupled with the required skills and competencies depends on the potential entrepreneurs' intention, which could be determined by so many factors, such as quality and effective entrepreneurship education, innovation and creativity, as well as

entrepreneurial passion. Entrepreneurship, therefore, has become a focal point and has been employed to solve this social problem of high unemployment rate.

This research was, thus, conducted in order to determine the factors that could influence entrepreneurial intention among students and eventually result to venture creation on graduation. This was achieved by focusing attention on effectiveness of entrepreneurship education as it affect some individual characteristics and skills (perceived creativity disposition and entrepreneurial passions) with considerable influence on entrepreneurial intentions, while also appreciating the significance of contextual/environmental factor (University support) in moulding entrepreneurship education to increase perceptions, and subsequently, decisions to create ventures.

## **1.2 Problem Statement**

The extreme lack of job opportunities faced by graduates has been increasing in most countries. This has necessitated entrepreneurship to be accepted with great interest and encouraged among many economies, (Van Gelderen *et al.*, 2008; Guzmán-Alfonso & Guzmán-Cuevas, 2012; Shaikh, 2012). According to Schwarz *et al.*, (2009), Ayobami and Ofoegbu (2011) and Shaikh (2012), entrepreneurship is encouraged for its attraction as a valuable career option among students worldwide, making it a popular research arena in the academic circle. Consequently, entrepreneurship results in achieving independence and high financial returns, besides contributing to better economic structure of a nation

(Martinez, Levie, Kelley, Saemundsson, & Schott, 2010; Ahmed, Aamir, & Ijaz, 2011; Ayobami & Ofoegbu, 2011; Prakash, Jain, & Chauhan, 2015).

Moreover, Reynolds *et al.*, (1994) and Solomon (2007) posited that the advancement of enterprising behaviour is a key motivating factor for broadening career opportunities among young graduates. However, entrepreneurial intention is crucial when predicting entrepreneurial behaviour (Arendt & Brettel, 2010; Gámez-González *et al.*, 2010; Zhang & Duan, 2010; Lee, Wong, Der Foo, & Leung, 2011; Gerba, 2012). As a result, entrepreneurial intention is employed to envisage students' participation in entrepreneurship and could explain the reason for students' decision to establish a business (Ariff *et al.*, 2010).

Theoretically, however, past studies have established the relationship between entrepreneurial intentions (EI), which had been considered as a strong and the best predictor of entrepreneurial activity (Shapero & Sokol, 1982; Bird, 1988; Katz, 1992; Krueger & Carsrud, 1993; Krueger Jr, Reilly, & Carsrud, 2000; Liñán & Chen, 2009; Pihie, Akmaliah, & Bagheri, 2009; Lee, Wong, Der Foo, & Leung, 2011), with some antecedents. In other words, while intention predicts behaviour, other positive particular attitudes predict intention. Intention, thus, is a medium to enhance the understanding of the actual behaviour (Ajzen, 1987, 1991). While, entrepreneurial intention is the quality that pushes an individual to choose a career in self-employment or establish personal business (Fayolle & Liñán, 2014). Although there is no general consensus on the determinants of entrepreneurial intentions, several factors have been found to influence

the willingness to undertake entrepreneurial activity (Gurbuz & Aykol, 2008; Martin, McNally, & Kay, 2013). However, little attention has been given in literature to the perception of students on the effectiveness of the entrepreneurship education acquired in driving creativity and passion and the ultimate impact on their entrepreneurial intention. The consideration of the universities' support in fostering this process has also been neglected in literature. This is important, given that entrepreneurship can be promoted by inculcating entrepreneurial skills at the point of education (Prakash, Jain, & Chauhan, 2015).

For example, there are scholarly discussions on the relevance of entrepreneurship education in impacting students' intention to become entrepreneurs (Hynes & Richardson, 2007; Souitaris *et al.*, 2007b; Schwarz, Wdowiak, Almer-Jarz, & Breitenecker, 2009; Packham, Jones, Miller, Pickernell, & Thomas, 2010; Piperopoulos & Dimov, 2014; Westhead and Solesvik, 2015). Entrepreneurship education refers to education that develops entrepreneurial attitudes and skills (Bae, Qian, Miao, & Fiet, 2014), that is necessary to succeed in business (Wilson, Kickul, & Marlino, 2007). According to Segal, Borgia, and Schoenfeld (2005), an effective entrepreneurship education should offer opportunities for individuals to learn and acquire experiences through creative and innovative activities, develop business plan, learn from successful role models, create social networks, and run simulated or real small business in schools. However, previous studies were yet to determine the value and the effect of entrepreneurship education (Peterman & Kennedy, 2003; Albornoz & Rocco, 2009), especially in relation to entrepreneurial intention (Gaddam, 2008; Solesvik, Westhead,

Kolvereid, & Matlay, 2012). Consequently, this study argued that evaluating the effectiveness of entrepreneurship education through the perception of the direct beneficiaries would provide better and valid assessment against the previous methods of evaluations. This study thus followed the recommendation of Martin *et al.*, (2013), that requires future studies to investigate the relationships between students' entrepreneurial learning, the development of their entrepreneurial competences and entrepreneurial intentions in educational settings.

Similarly, despite studies on entrepreneurship and innovation in relation to creativity, hardly has creativity been given much concern in intentions model (Amabile, 1996; Ward, 2005; Hamidi, Wennberg, and Berglund, 2008; Luca & Cazan, 2011; Prakash *et al.*, 2015). Creativity is the human ability to think, modify, discover and create something (Yunus, 2015). However, Ward (2004) suggested the possibility of creative persons' involvement in entrepreneurship activities, while, Hamidi *et al.*, (2008) found creativity to have significant positive effect on entrepreneurial intentions. However, this study deviated from the few previous studies by focusing on entrepreneurial students' perceived creativity disposition, supposing that the potential entrepreneurs could only perceive the possession of individual traits that reflect creativity (Carland, Hoy, Boulton, & Carland, 1984; Bird, 1989; Batey & Furnham, 2008). In addition, it is important for individual students to be able to perceive the possibility of producing new and practical ideas or products out of their own creativity (Darini, Pazhouhesh, & Moshiri, 2011). This is because creative thinking is an important skill for university graduates (Papaleontiou-Louca, Varnava-Marouchou, Mihai, & Konis, 2014). Moreover, self-assessment of

individual creativity disposition is supported in previous studies (Batey & Furnham, 2008).

Besides, passion is imperative in entrepreneurship (Bird, 1988; Cardon, Wincent, *et al.*, 2009; Cardon, Gregoire, Stevens, & Patel, 2013; Murnieks, Mosakowski, & Cardon, 2014; Pfeifer, Šarlija, & Zekić Sušac, 2016). It encourages creativeness, as well as the realization of novel and important information that is necessary to recognise the opportunity for investing in prospective business (Sundararajan & Peters, 2007; Baron, 2008). Thus, the absence of passion causes entrepreneurial disconnection, and thereby, leading to the collapse of venture (Cardon *et al.*, 2005). Researchers have therefore called for more understanding of passion for its fundamental importance in entrepreneurial activity (Cardon, Sudek, & Mitteness, 2009; Chen, Yao, & Kotha, 2009). However, most studies on passion (Baum & Locke, 2004; Chen *et al.*, 2009) were more concerned with individual entrepreneurial passion in relation to organisational outcome and similar outcomes that are behavioural (Murnieks *et al.*, 2011) with no emphasis on entrepreneurial intentions. Studies that relate passion with intention were indirect, usually observing passion as a moderator between some factors and intention (De Clercq, Castañer, & Belausteguigoitia, 2011) or as antecedent to variables that impact on intention (Vallerand *et al.*, 2007; Murnieks *et al.*, 2011).

Moreover, the current study adopted the instrument developed by Cordon *et al.*, (2013) to capture the exact measures of experience concerning entrepreneurial passion with its dimensions and domains. Cordon *et al.*, (2013), nevertheless, only stopped at the level of



developing and validating the instrument to capture entrepreneurial passion and its dimensions, which had been instrumental to the present study and other future studies, but did not extend to look into the influence of entrepreneurial passion on other possible outcomes.

Furthermore, several studies in the past have indicated that education should emphasize the development of creativity (Craft, 2001; Baumol, 2004; Jackson, 2008; Chen, Hu, Wang, & Chen, 2011; Feng, 2013). On the other hand, some scholars have shown that the more creative the students thought they were, the higher their entrepreneurial intentions were (Fatoki, 2010; Zampetakis, Gotsi, Andriopoulos, & Moustakis, 2011). However, previous studies have ignored the seemingly mediating role of the perception of creativity disposition between entrepreneurship education and entrepreneurial intention relationship. This is especially necessary as previous works have shown that entrepreneurship education increases entrepreneurial self-efficacy, which subsequently influences self-employment intention (Zainuddin & Rejab, 2010; Byabashaija & Katono, 2011; Lekoko, Rankhumise, & Ras, 2012).

Prior studies have also established the capability entrepreneurship education in building the passion among students to pursue entrepreneurial career (Souitaris *et al.*, 2007b; Halvari, Ulstad, Bagien, & Skjesol, 2009). Moving forward, other studies have shown that entrepreneurial passion, on the other hand, has driven people's desire to engage in entrepreneurship related activities (Bird, 1988; Baum & Locke, 2004; Cardon, Wincent, *et al.*, 2009; Cardon *et al.*, 2013). Yet, it is rare to find studies relating entrepreneurship

education, entrepreneurial passion, and entrepreneurial intention together in this order. In other words, studies showing the mediating role of passion in the relationship between entrepreneurship education and intention had been rare, such studies are needed given that the entrepreneurship programmes is found to increase attitudes and the overall entrepreneurial intention, (Souitaris *et al.*, 2007b).

Moreover, Cardon *et al.*, (2013) revealed that the entrepreneurial passion dimensions of intense positive feelings and identity centrality in the domains of inventing, founding, and developing are different conceptually and empirically from one another. This suggests that a good measure of entrepreneurial passion could integrate the relationship between the feelings and the centrality of the entrepreneur's self-identity for each domain. In addition, it is argued that the learning perspective on entrepreneurship would push students to focus on the passion for searching opportunities that would best fit their identity as future entrepreneurs (Corbett, 2005).

In addition, past studies have examined the effects of personal and environmental factors, including university environment on intention (Lüthje & Franke, 2003; Kristiansen & Indarti, 2004; Sequeira, Mueller, & Mcgee, 2007; Souitaris *et al.*, 2007b; Schwarz *et al.*, 2009; Packham *et al.*, 2010). However, little is understood about the interaction of university support and entrepreneurship education or other factors that had been said to influence entrepreneurial intention (Schwarz *et al.*, 2009; Liñán, Urbano, & Guerrero, 2011). This is especially necessary to determine how university environment or support could strengthen entrepreneurship education to influence personality traits and

entrepreneurial intentions. Moreover, this study followed Fayolle and Liñán (2014) suggestion for further research to investigate the role of institutions in influence entrepreneurial intentions, because institutions can both constrain and enable self-employment and entrepreneurship (Welter & Smallbone, 2012). Furthermore, previous results on entrepreneurship education through intention relationship had been inconsistent (Souitaris *et al.*, 2007b; Byabashaija & Katono, 2011; Lange, Marram, Jawahar, Yong, & Bygrave, 2011; Hsiao, Chen, Chou, Chang, & Jing, 2012; Lekoko *et al.*, 2012), whilst personality characteristics also showed weak or indirect effect on intention (Lüthje & Franke, 2003; Franke & Lüthje, 2004; Schwarz *et al.*, 2009). Consequently, as suggested by Baron and Kenny (1986), where weak or inconsistent relationships exist between independent and dependent variables, a typical moderating variable can be introduced.



### 1.3 Research Questions

In this study, solutions were proffered to the following research questions:

1. Does perceived effective entrepreneurship education positively relate to entrepreneurial intention, perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding among Nigerian university students?
2. Do Nigerian university students' perceived creativity dispositions, entrepreneurial passion for inventing, and entrepreneurial passion for founding positively relate to their entrepreneurial intentions?
3. Do perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding mediate the relationship between perceived effective entrepreneurship education and entrepreneurial intention among Nigerian university students?
4. Does perception of university support moderate the positive relationship between perceived effective entrepreneurship education, and perceived creativity disposition, entrepreneurial passion for inventing, as well as entrepreneurial passion for founding among Nigerian university students?

## 1.4 Research Objectives

The objectives of the study are depicted in the following:

1. To determine if perceived effective entrepreneurship education positively relates to entrepreneurial intention, perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding among Nigerian university students.
2. To determine if Nigerian university students' perceived creativity dispositions, entrepreneurial passion for inventing, and entrepreneurial passion for founding positively relate to their entrepreneurial intentions.
3. To establish if perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding mediate the relationship between perceived effective entrepreneurship education and entrepreneurial intention among Nigerian university students.
4. To examine if the perception of university support moderates the positive relationship between perceived effective entrepreneurship education, and perceived creativity disposition, entrepreneurial passion for inventing, as well as entrepreneurial passion for founding among Nigerian university students.

### **1.5 Scope of the Study**

This study focused on undergraduate university students in Nigeria. Specifically, the study concentrated on the students from the North-western geographical region of the country, which comprises of seven states. The study was carried out particularly among students from the three famous Federal universities located in three states of the North-western region. These universities have so far started the implementation of the Nigerian government directives of introducing entrepreneurship education for all students in the tertiary institutions. The three universities selected were (1) the premier university in the Northern Nigeria, Ahmadu Bello University (ABU), Zaria in Kaduna State, (2) Bayero University Kano (BUK) in Kano State and (3) Usman Danfodio University Sokoto (UDUS) in Sokoto State.

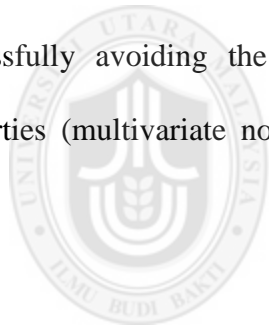
The study employed the entrepreneurial intention models of the Theory of Planned behaviour (TPB) developed by Ajzen in 1991 and the Entrepreneurial Event Theory (SEE) developed by Shapero and Sokol in 1982 to examine the moderating effect of the perception of university support on the relationship between perceived effective entrepreneurship education, and perceived creativity disposition, entrepreneurial passion for inventing, as well as entrepreneurial passion for founding. The study further investigated the mediating role of perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding between perceived effective entrepreneurship education and entrepreneurial intention relationship.

## 1.6 Significance of the Study

This study presents its contributions in terms of theory, methodology, and practice. Theoretically, this study extends the use of both TPB and SEE frameworks to provide useful information related to entrepreneurship education and entrepreneurial intention. Krueger *et al.*, (2000), however, suggested that the TPB is an important tool that allows educators to assess their training programmes. Specifically, the study extends the existing intention theory in the context of entrepreneurship by capturing students' perception of their own creativity disposition and entrepreneurial passion in two dimensions (passion for inventing and passion for founding). In addition, it adds novelty to the theories by modelling the relationship between effective entrepreneurship education and two new outcome constructs (i.e., passion for inventing and passion for founding), which have not previously been examined. Furthermore, the novelty of the theories is in their application in a new research setting (developing country), as researches concerning entrepreneurship education and entrepreneurial intentions is highly under researched in developing countries (Nabi & Liñán, 2011). Thus, the study believes that the proposed theoretical framework would be able to offer a significant contribution to knowledge in the context of entrepreneurship intentions.

On the other hand, methodologically, this study utilized hierarchical modelling using PLS in order to explain the relationships in its model. It had been one of the few attempts to conceptualize and to validate a hierarchical model using PLS in the context of entrepreneurship intention research. Besides, by employing the repeated indicators

approach (Wold 1982; Lohmoller 1989) in estimating the higher-order formative latent variable, the study confirmed adequate measurement and structural properties for the research model (Chin 2010; Hair *et al.*, 2011). The application of PLS had enable the extension of the theoretical contribution of the study by developing and validating a second-order formative entrepreneurial intention model. The study further highlighted that higher-order constructs can be developed with outcome constructs in a structural model to prove nomological validity. The study also demonstrated the robustness of the analysis by illustrating how to quantify mediating and moderating variables in a hierarchical model. This had been a situation where PLS outperformed covariance-based SEM (CBSEM) in estimating a formative second-order hierarchical model by successfully avoiding the various constraints of CBSEM concerning distributional properties (multivariate normality), measurement level, model complexity and sample size.



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Other than that, this study also offers several important practical contributions; understanding the antecedents of entrepreneurial intentions of Nigerian university students would alert all stakeholders responsible for entrepreneurship development to have a better picture of how EI is formed, as well as how potential venture initiators' beliefs and perceptions impact on their intention to commence a business. The study also revealed the role entrepreneurship education played in driving individual personality trait to increase entrepreneurial intention if the programme is made effective. This enables the government and the policy makers to direct thoughts and resources on young adults who in all possibility will form entrepreneurial intentions and consequently be involved in



entrepreneurial behaviour. Therefore, knowledge of the determinants on entrepreneurial intention can help in entrepreneurial training and in discovering the best ways to mould the intention, as well as to enhance the likelihood of the consequential behaviour of a new business start-up.

Moreover, this study also exposes the need for universities to support in the enhancement of the ultimate goal business start-up by young graduates. Hence, some scholars have pointed out the challenges ahead for developing graduate entrepreneurs in the developing world, as well as the provision of suitable and supportive environments which contributes to entrepreneurship development (Nabi & Liñán, 2011). However, the findings obtained in this study provided a certain clue that can be employed for future design of entrepreneurship education as (1) it showed the need for educators to advance training programmes that would help in increasing enterprising behaviours, characteristics, and skills necessary for business start-up, (2) to introduce creativity enhancing technique that will make the overall process interesting and fun, as well as (3) to introduce useful learning content with practical reality since it is capable of affecting students' entrepreneurial intentions via creative ability development.

In addition, in entrepreneurship education, educators could increase the possibility of students showing strong entrepreneurial passion if they are made to recognise that entrepreneurial opportunities are available in different areas and disciplines. Hence, encouraging the students to choose areas and disciplines they are most interested in, and

then, develop skills for searching and discovering entrepreneurial opportunities in those areas. Furthermore, role models could be employed to give motivational talks that would inspire students and build their passion towards entrepreneurship development (Cardon *et al.*, 2005, 2009). Furthermore, university environment can provide suitable conditions to trigger creativity and entrepreneurial passion among students, while recognizing how these important factors can increase intention to venture into entrepreneurship as an alternative career option among students.

Finally, this study should be of interest to the groups of researchers, teachers, and supporters of entrepreneurship since it clarified the relationships between the concepts of perceived creativity disposition, entrepreneurial passion for inventing and founding, as well as the perception of university support in the formation of entrepreneurial intention. It is also hoped that this study would guide further research into exploring the interplay of personality traits and environmental conditions in enhancing entrepreneurship.

## 1.7 Organisation of the Thesis

This work is presented in five chapters; the first chapter gives a general overview on the issues of concern, the entrepreneurial intentions, and some antecedent factors. The problem statement, the research questions and objectives, as well as the scope and significance of the study are all highlighted. Next, chapter two is the review of relevant literature concerning the variables of the study. Later, chapter three depicts the methodology that portrays the procedure adopted in undertaking this research. The fourth chapter presents the results of the study including the test of hypotheses. Finally, chapter five discusses the results while considering the objectives set for the study.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter reviews previous literature pertinent to this study. The review includes issues related to concept of entrepreneurship and entrepreneurial intentions; entrepreneurship education and entrepreneurial intentions; entrepreneurship education and creativity; entrepreneurship education and passion; creativity and entrepreneurial intention; entrepreneurial passion and entrepreneurial intentions; university role and entrepreneurial intention; and in conclusion, the summary of literature is presented.

#### **2.2 Concept of Entrepreneurship**

Entrepreneurship is synonymous to surviving the current economic trend in various countries. It has, therefore, become an issue of national concern worldwide (Ariff, Bidin, Sharif, & Ahmad, 2010; Liu & Hu, 2010). Its contribution to economic performance in numerous countries is realized through job creation, innovation, and creativity advancement (Shane & Venkataraman, 2000; Audretsch & Thurik, 2001; Carree & Thurik, 2003; Acs & Audretsch, 2005; Biju & Vardhan, 2011; Parnell, 2011; Rowley *et al.*, 2011). Accordingly, innovation and creativity encourage the growth of business, usher in new products and services, as well as promote investment capital and economic growth (Hisrich & Peters, 2002). Entrepreneurship is responsible for healthy competition

among businesses, and subsequently, a vibrant market environment, hence improve and sustain the economy in countries (Turker & Selcuk, 2009; Ariff *et al.*, 2010), especially, in the face of increasing trends of globalization (Venkatachalam & Waqif, 2005; Volery & Shaper, 2007). Moreover, researchers have displayed a direct relationship between entrepreneurial activities and economic growth (Lee & Wong, 2003; Karanassios, Pazarskis, Mitsopoulos, & Christodoulou, 2006), and so, promoting entrepreneurship is of utmost concern in government policy (Lüthje & Franke, 2003).

Furthermore, the importance of entrepreneurship is even more clearly acknowledged in the recession experienced by most countries and the rising wave of unemployment situation (Reynolds, Storey, & Westhead, 1994; Reynolds, Miller, & Maki, 1995; Guzmán-Alfonso & Guzmán-Cuevas, 2012). The extreme lack of job opportunities faced by graduates in most countries necessitated entrepreneurship to be accepted with great interest and to be encouraged among many economies, (Van Gelderen *et al.*, 2008; Shaikh, 2012). Hence, Reynolds *et al.*, (1994) and Solomon (2007) posited that the advancement of enterprising behaviour is a key motivating factor for broadening career opportunities among young graduates. According to Lee, Chang, and Lim (2005), Schwarz *et al.*, (2009), and Ayobami and Ofoegbu (2011), entrepreneurship is encouraged for its attraction as a valuable career option among students worldwide, making it a popular research arena in the academic circle in order to understand the importance and the contributions of entrepreneurship. That is why more people, and in recent times; undergraduates, are continually encouraged into owning and growing small businesses (Egbetokun *et al.*, 2009). Consequently, entrepreneurship results in achieving

independence, and high financial returns, besides contributing to better economic structure of a nation (Lüthje & Franke, 2003; Tan, Williams, & Tan, 2005; Martinez, Levie, Kelley, Saemundsson, & Schott, 2010; Ahmed, Aamir, & Ijaz, 2011; Ayobami & Ofoegbu, 2011).

Nonetheless, the importance of entrepreneurial activities is not limited to economic context by providing employment and business opportunities alone, but it also helps in societal context by elevating the standard of living of individuals and the society as a whole (Matlay & Westhead, 2005; Volery & Shaper, 2007; Qureshi, Ahmed, & Khan, 2011). Thus, the need for entrepreneurial development is felt in this present world, especially in developing countries where socioeconomic misfortune, such as fast raise in food and fuel prices, poses severe danger to social peace and security (Levenburg & Schwarz, 2008). In other words, entrepreneurship is responsible for social adjustment of the economies in developing nations (Yusof, Sandhu, & Jain, 2007; Alam, 2009) and it is an incubator of technological innovation (Turker & Selcuk, 2009).

In addition, establishment of new ventures is considered the most significant force for economic development (Dahlstrand, 2007; Saarenketo, Puumalainen, Kuivalainen, & Kyläheiko, 2009). Recognised as the process of conceptualization and execution (Quan, 2012), the importance of new business creation is in its contribution to creating jobs, providing efficiency, increasing productivity, developing structural changes, and thereby stabilizing the society, improving innovation, increasing industrial competition, besides coming up with a variety of products and solutions to problems (Chen *et al.*, 2012;

Fritsch & Sorgner, 2013). According to Otsuki (2002), entrepreneurial activities contribute to more than 80% of industrial production in developed countries.

Furthermore, according to Gray, Foster, and Howard (2006), most countries have considered entrepreneurship as the solution for economic depression because it provides assurance of economic returns from various forms of activities (Egbetokun *et al.*, 2009). Meanwhile, Ayobami and Ofoegbu (2011) also noted that entrepreneurship is a universal remedy for poverty reduction and eradication, which is one of the crucial eight-point agenda of millennium development goals.

Generally, entrepreneurship has been defined in different ways (Bruyat & Julien, 2001), with connotation, such as initiating a business to broader conceptualisations like work attitude that emphasizes self-reliance, initiative, innovativeness, and risk-taking (Tan *et al.*, 2005; Van Gelderen *et al.*, 2008). According to Fatoki (2010), "Entrepreneurship" is the ability and the willingness to start, organize, and manage productive venture with all associated risks, while in search of profit as a reward. The economies of the world, henceforth, thrive on entrepreneurship, and therefore, no country can survive and sustain its economy without healthy and vibrant entrepreneurial activity.

Within the context of entrepreneurship, entrepreneurs transfer ideas into products and services, and eventually create wealth while also reducing unemployment (Egbetokun *et al.*, 2009). Their contribution to nation's economic development has also been recognised

(McLarty, 2005; Baron & Shane, 2008; Sobel & King, 2008; Qureshi *et al.*, 2011). They are the agent of capital movement; utilizing available natural resources, as well as creating markets and business process (CortÉS Pascual, 2009), hence, moving engines of economic activities and growth (William & Maria, 2000; Baron & Shane, 2008).

On top of that, entrepreneurs have the ability for recognizing and exploiting business opportunities (Krueger & Brazeal, 1994; Fatoki, 2010), with determination that they will continually seek for these opportunities to satisfy their achievement, and needs, besides fulfilling competitive desires (Pech & Cameron, 2006), while also taking risks in the process (Norton Jr & Moore, 2006; Pihie, Akmaliah, Sani, & Salleh, 2008). The more unstable and lively the business environments in terms of competition are, the more established the environment is for large corporations, and hence, Schumpeter observed that entrepreneurs promote “creative destruction”, and therefore, encourage all types of businesses to improve their status or cease to exist.

The activities of entrepreneurs are responsible for overall economic prosperity of nations. It plays a tremendous role in introducing economic transformation and developments to a country, as well as contributing to better standard of living for people, and most importantly, through job creation (Koe, Sa’ari, Majid, & Ismail, 2012). Empirically, the role of an entrepreneur brings a lot of changes in recent time, such as the technological development and the globalization process, due to markets liberalization (Liñán & Santos, 2007).



Moreover, entrepreneur is characterized as a person who has great thoughts, flexibility, creativeness, and innovativeness; in habit of conceptual thinking, and accepts change as an opportunity for business (Richards, 1999; Timmons, 1999; Kao *et al.*, 2002). They are seen as risk takers with optimism to succeed in business environment (Richards, 1999; Audretsch & Thurik, 2001), as well as sufficient self-confidence to start realising their ideas, and desire for independence (Hisrich & Peters, 1989). Therefore, individual entrepreneurial idea should be considered as a significant factor for economic growth. It is also expected that the responsibility of raising enterprising people should be handled by educational system, which should be in charge in building and spreading entrepreneurial idea among students and graduates.

Consequently, the value of entrepreneurship has led to the ever increasing and continually growing field of entrepreneurship education. The widespread need for developing business, entrepreneurship education, and programmes is fast growing owing to its function in generating wealth and competition (Beugelsdijk & Noorderhaven, 2004; Martinez *et al.*, 2010). Besides, most empirical studies conducted exhibited that entrepreneurship can be taught and that education can promote entrepreneurship (Falkang & Alberti, 2000; Gatewood, Shaver, Powers, & Gartner, 2002; Kuratko, 2003; Kirby, 2004; Mitra & Matlay, 2004; Henry, Hill, & Leitch, 2005; Kuratko, 2005; Kirby, 2006; Harris & Gibson, 2008), and hence, in the past few years, the world witnessed an enormous growth in launching entrepreneurship as an academic discipline, besides introducing entrepreneurship courses and programmes at all educational levels in order to build entrepreneurship spirit and culture among young people (Falkang & Alberti, 2000;

Solomon, Duffy, & Tarabishy, 2002; Solomon, 2007; Dickson, Solomon, & Weaver, 2008; Matlay, 2008; Urbano, Aponte, & Toledano, 2008; Adejimola & Olufunmilayo, 2009; Akpomi, 2009). On this note, efforts are needed, therefore, to intensify the mobilization and the enhancement of entrepreneurial action, which benefits individuals, government, and the society at large.

### **2.3 Concept of Entrepreneurial Intentions**

Entrepreneurial intention is one of the main characteristics that make entrepreneurs successful, because of its dominant motivating factor that influences individual behaviour (Ajzen, 1991). In fact, it has been generally agreed that intention is strongly related with the actual behaviour (Krueger Jr *et al.*, 2000). Entrepreneurial intention is, therefore, seen as the deliberate position of mind that comes before an activity and pushes individual consideration to engage in business formation (Bird, 1989; Shane & Venkataraman, 2000). Intentions, then, are seen to play a vital function when choosing to establish a new business or venture or creation of a new value in an existing one (Bird, 1988; Lee & Wong, 2004), which then becomes an essential antecedent in performing entrepreneurial behaviours (Fayolle, Gailly, & Lassas-Clerc, 2006a). Thus, intention is known to be the best and immediate predictor of behaviour (Ajzen, 1991, 2001), such as entrepreneurship (Bagozzi, Baumgartner, & Yi, 1989). Understanding entrepreneurial intention is, therefore, crucial when predicting entrepreneurial behaviour (Bird, 1988; Katz & Gartner, 1988; Shane & Venkataraman, 2000; Kruger, 2004; Arendt & Brettel, 2010; Gámez-

González *et al.*, 2010; Lin *et al.*, 2010; Lindblom & Tikkanen, 2010; Zhang & Duan, 2010; Gerba, 2012).

Moreover, as a prerequisite to new venture formation, entrepreneurial intention has been continually receiving increasing attention, especially from the social psychological viewpoint (Shapero & Sokol, 1982; Krueger Jr *et al.*, 2000; Shook, Priem, & McGee, 2003; Edelman & Yli-Renko, 2010). Entrepreneurial intention is a good predictive power for engaging in entrepreneurship (Ajzen, 1987; Shook *et al.*, 2003; Kolvereid & Isaksen, 2006; Brush, Manolova, & Edelman, 2008). Although, Thompson (2009) revealed that there is lack of reliable definition for intention and a consistent process to assess an individual's entrepreneurial intention, the role of entrepreneurial intentions is accepted as relevant in the managerial literature (Sutton, 1998). Earlier contributions show that intentions is capable of predicting individual behaviours (Ajzen, 1991), as well as organisational results relating to survival, development, and growth (Mitchel, 1981). Consequently, managers and entrepreneurs appreciate and predict intentions as an important element to succeed (Tubbs & Ekeberg, 1991). Even though some ventures are commenced for solving some problems of need and then growing to serve a bigger market, many derive at as a result of a planned process (Shapero & Sokol, 1982; Ajzen, 1987; Bird, 1988; Krueger Jr *et al.*, 2000; Edelman & Yli-Renko, 2010; Kautonen, Luoto, & Tornikoski, 2010; Lee, Wong, Foo, & Leung, 2011).

Furthermore, entrepreneurial intention models came into light as it is believed to predict the entrepreneurial behaviour of individuals (Gerba, 2012; Guzmán-Alfonso & Guzmán-

Cuevas, 2012). Some researchers emphasize the need to understand entrepreneurial event prior to engaging in venture creation (Krueger Jr *et al.*, 2000; Pruett, Shinnar, Toney, Llopis, & Fox, 2009), believing the choice to be an entrepreneur as planned and conscious act (Krueger Jr *et al.*, 2000). Meanwhile, in the views of Autio *et al.*, (1997), Bird (1988), Krueger (1993), and Krueger Jr, *et al.*, (2000), intention-based models present a consistent and an appropriate support to better understand the entrepreneurial process. Accordingly, to better comprehend the entrepreneurship process, it is more appropriate to examine the thinking that follows the entrepreneurial attitudes, the cognitive structures, the entrepreneurial intentions and the entrepreneurial actions (Krueger, 2007).

On top of that, according to some scholars, entrepreneurial intention is the interest to undertake entrepreneurial activity (Krueger Jr *et al.*, 2000; Gurbuz & Aykol, 2008; Fitzsimmons & Douglas, 2011), which usually involves inner guts, desire, and the feeling to be independent (Ayobami & Ofoegbu, 2011). As a result, entrepreneurial intention is employed to envisage students' participation in entrepreneurship and could clarify the reason for students' decision to establish a business (Ariff *et al.*, 2010). Knowledge of the determinants for increasing intention among students to establish new business is crucial for developing policies and organising programmes responsible for encouraging entrepreneurial behaviour (Bakotić & Kružić, 2010). Consequently, governments are highly encouraging graduates to consider the field of entrepreneurship, given the lack of job opportunity as a result of global economic downturn.

Besides, it is also important that potential entrepreneurs are identified and developed at their early stage while in school (Chen & Lai, 2010), while instructors must understand the factors that motivate or hinder entrepreneurial activity (Tajeddini & Mueller, 2009). In order to design effective programmes, the factors that influence students' career choice towards self-employment should be identified; since good understanding of these factors is useful for encouraging entrepreneurial behaviour and entrepreneurial success (Lüthje & Franke, 2003). Thus, individual entrepreneurial intention will possibly remain as an important construct in research area involving enterprising persons, their recognition of business opportunities, and the choice to exploit various risks in establishing new ventures (Palich & Ray Bagby, 1995).

Generally, researchers describe three important factors of individual attitude towards behaviour, perceived social norms and self-efficacy as influencing entrepreneurial intention (Krueger Jr *et al.*, 2000; Liñán, Rodriguez-Cohard, & Rueda-Cantucho, 2005). However, research in this area has continued to generate interest (Peterman & Kennedy, 2003; Wilson, Marlino, & Kickul, 2004; Rotefoss & Kolvereid, 2005; Liñán & Chen, 2006; Souitaris *et al.*, 2007b; Wilson *et al.*, 2007; Harris & Gibson, 2008; Liñán & Chen, 2009; Engle *et al.*, 2010). Consequently, some studies (Lee & Wong, 2003; Franke & Lüthje, 2004; Teixeira, 2007; Rodrigues, Dinis, Paço, & Ferreira, 2008) have attempted in providing a good understanding of the exact variables that highly contributed to business creation among graduates.

Apart from that, Lee and Wong (2004) indicated that some cognitive factors such as needs, values, wants, habits, and beliefs could affect the intention to exhibit entrepreneurial behaviours. Hence, cognitive variables are significant in increasing an individual understanding of decision process has been pointed out by Shaver, Williams, and Scott (1991), as well as Baron (2004). Therefore, the difficult process of entrepreneurship is easily understood when the cognitive perspective is considered. In other situations, the models used included individual attributes, characteristics, values, culture and demographic factors to display the reasons why some people engage in entrepreneurial behaviour, while others do not (Mueller & Thomas, 2001; Mueller, Thomas, & Jaeger, 2002).

In past studies, extensive discussion have been made on the influence of personal and environment factors on entrepreneurial intention, such determinants are attitudes towards entrepreneurship, personality traits and social environment (Robinson & Haynes, 1991; Davidsson, 1995; Brandstätter, 1997; Franke & Lüthje, 2004; Segal *et al.*, 2005). It is understood from these studies that entrepreneurial potential motivates individuals if they believe they possess the ability, whereas the environmental hold some potentialities as there are available social support (Kirby, 2006). Although, there is a relationship between personality factors and entrepreneurial intention, results across studies are inconsistencies. However, personality is displayed within certain contextual domains of demographic, cultural, economic, social, political, and technological factors. In other words, people can be affected by factors known to be related with personal environment and individual live style (Hisrich, 1990). Hence, personality traits cannot be in isolation

of contextual factors. On the other hand, entrepreneurial intention (EI) also depends on other determinants, such as unsuitable economic situation or absence of employment opportunities (Shapero & Sokol, 1982; Ghatak, Morelli, & Sjöström, 2007). Yet, not all people exhibit similar intentions given a similar external situation. This shows that other personal factors could be responsible for EI.

Nonetheless, previous works have categorized factors responsible for shaping EI into individual and contextual variables (Bird, 1988). In fact, some studies suggested significant roles for individual factors, including personality like risk-taking propensity and entrepreneurial self-efficacy (Gartner, 1988; Shaver *et al.*, 1991; Boyd & Vozikis, 1994; Henry, Hill, & Leitch, 2003; Zhao, Seibert, & Hills, 2005; Yusof *et al.*, 2007; Ismail *et al.*, 2009; Zhao, Seibert, & Lumpkin, 2010); demographic traits like age (Levesque & Minniti, 2006), gender (Brush, 1992; Fay & Williams, 1993; Boden Jr & Nucci, 2000; Marlow & Patton, 2005; Brush, Carter, Gatewood, Greene, & Hart, 2006; Welter & Smallbone, 2006; Minniti & Nardone, 2007; Gupta & York, 2008; Gurbuz & Aykol, 2008), family background of individual (Aldrich & Cliff, 2003; Carr & Sequeira, 2007; Gurbuz & Aykol, 2008), family and personal entrepreneurial experience (Shapero & Sokol, 1982; Krueger & Carsrud, 1993; Raijman, 2001).

Meanwhile, others are education (Dyer, 1994b; Jo & Lee, 1996; Kolvereid, 1996; Gorman *et al.*, 1997; Kolvereid & Moen, 1997; Blanchflower & Oswald, 1998; Mazzarol, Volery, Doss, & Thein, 1999; Henderson & Robertson, 2000; Galloway & Brown, 2002; Franke & Lüthje, 2004; Shepherd & DeTienne, 2005; Souitaris *et al.*,

2007b; Ismail *et al.*, 2009; Autio & Acs, 2010); education and training (Nabi & Holden, 2008); cognitive factors (Baron, 2004); and more importantly, the certainty of entrepreneurship profession as practicable and attractive (Krueger & Carsrud, 1993; Krueger Jr *et al.*, 2000; Fitzsimmons & Douglas, 2011) in influencing entrepreneurial intentions. The motivation to achieve and self-image have equally become known as key contributing factors (de Pillis & Reardon, 2007). Other scholars, in studying the role of contextual dimensions, indicated that influences from environmental (Morris & Lewis, 1995) and support from environmental (Lüthje & Franke, 2003) had influence on entrepreneurial intentions.

Similarly, demographic variables, such as academic qualifications of parents, parental profession, attitude towards entrepreneurship, and university environment have gained substantial consideration (Gürol & Atsan, 2006; Zampetakis & Moustakis, 2006). Parenting style, family background, and educational background were also reported to show different models of entrepreneurial interest development (Schröder & Schmitt-Rodermund, 2006). The demographic factors appeared to be for creating an entrepreneurial type of personality.

## **2.4 Entrepreneurship Education and Entrepreneurial Intentions**

Having realized the significant contribution of entrepreneurship to any economy, considerable attention has ever since been given to entrepreneurship education, especially by various governments of countries. Entrepreneurship education provides the platform



for most economies of the world to increase the number and the quality of entrepreneurs (Matlay, 2005). This can be observed from the recent growth and the development of schools curricula, as well as promotion of programmes, devoted to entrepreneurship and new-venture creation worldwide (Kuratko, 2005). Hence, higher educational institutions have responded to the mandate asserted by the governments in teaching entrepreneurship to develop skills that are necessary for self-employment and in meeting the demand of business sectors that desire individuals with knowledge and requisite skills to fit into the corporate world (Roxas *et al.*, 2008). For many developing countries, it is even more necessary to develop graduate entrepreneurship education not only as a means of encouraging venture creation and entrepreneurial development, but also as a basis for national competitiveness and economic growth (Nabi & Liñán, 2011).

Furthermore, entrepreneurship education has been defined by Jones and English (2004) as a way of developing individuals' ability to recognise business opportunities and cash on them, as well as to develop self-esteem, knowledge, and skills in commencing a business venture in the event of risk. Their definition, however, emphasizes on the kind of knowledge that is action-based, encourages practical learning, problem-solving type, project-based, creative, and allows peer evaluation. They further argued that such learning process offers enterprising skill behaviour that is required to create and manage ventures. In addition, Politis (2005) also developed a framework that recognized three important mechanisms in the process of entrepreneurial learning; transformation process, entrepreneurs' career experience, and entrepreneurial knowledge, which have been said to be effective in recognizing entrepreneurial opportunities.

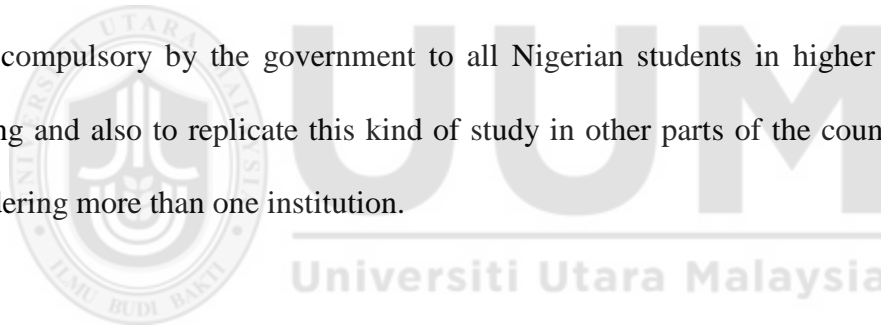
Thus, the main consideration in the various definitions of entrepreneurship education is how effective does the programme provides the required knowledge for practical business situation, builds self-confidence and develop skills for successful business venture (Wilson *et al.*, 2007). Other than that, according to Liñán, Rodríguez-Cohard, and Rueda-Cantuche (2011), entrepreneurial training should consider, in addition to motivation of starting business, provides the general knowledge of entrepreneurship, show how entrepreneurs should function and how to develop a business venture after the initial start-up. Their study suggested that these can be achieved through raising awareness in seminars, discussions on growing and developing firms, encouraging creative thought and opportunity recognition, as well as acquiring knowledge of the business environment.

Besides, past researches have examined the relationship between entrepreneurship education and entrepreneurial intentions. For example, Souitaris, Zerbinati, and Al-Laham (2007b) employed the theory of planned behaviour in testing how entrepreneurship programmes influences entrepreneurial attitudes and intentions among students. This was done to confirm assertion made in previous studies about entrepreneurship education influence on the intention to create a business. The results showed that the entrepreneurship programmes influenced attitudes and entrepreneurial intention, while inspiration was the most dominant benefit derived from the programme. The findings also threw in light to the practice of teaching entrepreneurship and suggested that for effective results, such programmes should offer courses with relevant modules, encourage the design of effective business plan that can stand the test of time

with reasonable business idea, as well as provide inspirational talks on business success and networking. The study also suggested that university should support in terms of market-research and commercialization, provision of enabling environment, and interestingly, seed funding to student-teams or groups.

In a similar study on careers among university students in computer science, electrical engineering, and business, Dohse and Walter (2010) examined the extent to which entrepreneurship education within the university departments influenced students' entrepreneurial intentions. They proposed that the effect of such education could depend on the mode of delivery (active or reflective), the regional context, and it can be supported by the influence of role models or work experience. Their results revealed that intentions and attitudes are directly affected by the active modes of entrepreneurship education, while a reflective mode was influenced depending on the environment. Besides, entrepreneurship education was influenced by parental role models and work experience in different ways. Although the study provided implication on carrying on entrepreneurship teaching and gave clear distinction between the two modes of entrepreneurship education, their study, however, concentrated on a few departments with the belief that they are known for their growth and employment potentials. However, the recent growth and the significance of entrepreneurship have gone almost beyond imagination, especially when the current advancement in technology and other important areas in sciences are considered.

Similarly, Izedonmi and Okafor (2010) examined if entrepreneurial intention was affected by entrepreneurship education, using data collected from 250 students who had enrolled in an entrepreneurship course in their institution of higher learning from the South West of Nigeria. The regression analysis results showed that the students who had the privilege to study entrepreneurship education exhibited high entrepreneurial intentions. This study empirically contributed to the research area that has received less attention in Nigeria. However, the result cannot be generalized even within the South East of the country, given its small sample size and the limitation that the course was only offered to students of a particular specialization at the time of the study. Therefore, it might be interesting to examine such relationship at present as the course has been made compulsory by the government to all Nigerian students in higher institutions of learning and also to replicate this kind of study in other parts of the country, while also considering more than one institution.



Meanwhile, Nabi and Linan (2011) identified and clarified issues pertaining to entrepreneurship among graduates in the developing world. They realized that such entrepreneurship in the developing world was grossly under researched and pointed out the importance of increasing researches in the area of graduate entrepreneurial intentions, as well as business start-up education to better understand this area of research. They conclusively emphasised on entrepreneurship education in particular as a key instrument to help promote entrepreneurial activity.

This and other similar motivational studies have continued to stimulate researchers to study entrepreneurship education. Hence, researchers like Keat *et al.*, (2011) investigated the inclination of northern Malaysian university students towards entrepreneurship. The study also investigated if demographic characteristics and family business background had any influence on the students' tendency to involve in entrepreneurship activities. The result of the study established two entrepreneurship education variables with a significant relationship on the students' tendency towards entrepreneurship. Moreover, two demographic variables and family business background were found to influence the university students' inclination towards entrepreneurship.

In a related study, Lange, Marram, Jawahar, Yong, and Bygrave (2011) investigated if entrepreneurship education had any significant influence on intentions to become entrepreneurs involving 3,775 graduates from Babson College from 1985 to 2009. It was confirmed that offering more than one entrepreneurship courses contributed significantly to influence students' intention to be an entrepreneur and even become real entrepreneur immediately after graduation and afterwards. Writing business plan also highly influenced students' intentions and even in undertaking the real activity.

In contrast, Lekoko, Rankhumise, and Ras (2012) investigated to determine and evaluate the effectiveness of entrepreneurship education at two universities in Botswana. They employed a convenient sampling approach to select 400 students, who then responded to close-ended questions. The results revealed that entrepreneurship education was not well-developed in Botswana to successfully provide students with entrepreneurial skills and

competencies that could assist them in choosing entrepreneurship as a career option. This study, however, showed that effective entrepreneurship education was indeed important in driving students' entrepreneurial intention.

Similarly, Hsiao, Chen, Chou, Chang, and Jing (2012) investigated if entrepreneurial courses can increase the entrepreneurial intention of students as they surveyed students from 34 departments of universities, including 22 universities of science and technology. Employing a convenient and non-probability sampling approach, the study realized 762 valid copies of returned questionnaires. The study indicated that entrepreneurial courses and entrepreneurial intentions were unconnected with one another, but found correlation between entrepreneurial intentions with academic performance, school attribute, gender, and family entrepreneurial experience. The study also found entrepreneurial intentions to be uncorrelated with part-time work experience and the current year of students' study. The inconsistency between these results and prior studies (Souitaris *et al.*, 2007b; Lange *et al.*, 2011) calls for more researches relating entrepreneurship education and entrepreneurial students' intentions in order to confirm, or otherwise the previous findings, and to also introduce other variables that could probably explain why such variations existed.

Furthermore, it is not unusual to be confronted with the question of whether people who received entrepreneurship education or training will build entrepreneurial intention more compared to people that did not receive such training. Hence, in a comparative study, Gerba (2012) studied the entrepreneurial intentions among young university students in

Ethiopia. Utilizing 156 entrepreneurship intention questionnaires on a scale of seven, the result showed students who acquired entrepreneurship education to be more inclined to entrepreneurship behaviour than the students who did not acquired the knowledge.

In the same context, Muofhe and Du Toit (2011) compared students who studied entrepreneurship and does that did studied entrepreneurship with the aim to explore the differences in their entrepreneurial intention. The study also examined if entrepreneurship education influences entrepreneurial intention as well as determined role models and entrepreneurial intention relationships. In doing these, they sampled conveniently 269 final-year students in an institution of higher learning in Johannesburg, dividing them into 162 and 107 entrepreneurship and non-entrepreneurship students respectively. Their study suggested that entrepreneurship students had been more disposed to entrepreneurial intention. In addition, there was a significant relationship between entrepreneurship education and entrepreneurial intention, so also was the relationship between role models and entrepreneurial intention.

Likewise, Kolvereid and Moen (1997) acknowledged that entrepreneurship is a well-recognised subject in universities and business schools, and confirmed that there are seemingly limited studies that had investigated the effect of entrepreneurship education. They, consequently, compared the behaviour among Norwegian business school graduates between does who were offered versus does who were not offered the course. Their results indicated that graduates who were offered entrepreneurship showed more

likeliness to begin businesses; they also exhibited stronger entrepreneurial intentions than the other graduates.

Focusing on another perspective, Peterman and Kennedy (2003) investigated to determine if participation in an enterprise education programme will have any effect on the perceptions of desirability and feasibility of starting a business. They sampled school students enrolled in an enterprise programme in order to conduct an analysis before and after the programme. At the end of the enterprise programme, the participants' perceptions of desirability and feasibility were significantly higher. Moreover, they also found that change in perception has a relationship with the experience in the enterprise education programme. The study, generally gave the proof that entrepreneurship education is an important variable in entrepreneurial intentions models.

Following in the same direction, Byabashaija and Katono (2011) examined in longitudinal study the impact of entrepreneurship education and societal subjective norms on entrepreneurial attitudes and intentions among college students in Uganda. Data were gathered in two streams; before and after the entrepreneurship course in a span of four months. Analyses were conducted to observe any modification concerning the attitudes and the intentions of students at the end of the entrepreneurship course, likewise, the relationship was mediated by the role of attitudes and was moderated by the role of employment expectations. The results showed a considerable change in attitudes, and a significant mediating role of attitude. The findings presented important information for policy makers and raised some questions to the researchers, probably on how effective



such courses in entrepreneurship education can be and the mechanism that could boost this effectiveness, such as the role of university.

In addition, Owusu-Ansah and Poku (2012) investigated the influence of entrepreneurship education on business students' intentions and aspirations, including their attitudes towards business start-ups. The students were studied prior to and after completion of the entrepreneurship programme. The study discovered that entrepreneurship education influenced the intentions and aspirations of students, as well as decision to be self-employment. The study suggested the provision of an enterprise centre to support and to encourage students into accepting self-employment as an option. The establishment of enterprise centre as a support to students by the university can make entrepreneurship education effective.

In another study, Karimi, Biemans, Lans, Mulder, and Chizari (2012) employed the TPB to assess the effect of entrepreneurship education programmes (EEPs) on entrepreneurial intentions among 320 students exposed to entrepreneurship courses at six universities in Iran. Questionnaires were administered before and after the programmes. EEPs were found to significantly influence perceived behavioural control and subjective norms. Nevertheless, the effects of EEPs on attitudes towards entrepreneurship and intention were not supported.

Meanwhile, in a survey conducted among immediate graduating students from major universities in Malaysia to determine the effectiveness of a specialized entrepreneurship programmes made available for undergraduates from the “ME generation”, Zainuddin and Rejab (2010) showed that the students perceive self-actualisation as well as the expectations of lecturers does not encouraged self-employment, but believed that specialized entrepreneurship education contributed to the increase in entrepreneurial self-efficacy as well as self-employment intention. This study, therefore, highlighted that introducing specific entrepreneurship education targeted and suitable to a particular group could yield desired results.

On top of that, in a research carried out by Fayolle, Gailly, and Lassas-Clerc (2006a), a framework based on TPB was proposed to evaluate the designs of entrepreneurship education programmes (EEP). Included in the model are the characteristics of EEP as exogenous variables and the antecedents of entrepreneurial behaviour as endogenous variables. Even though the sample of the study was small, the data were consistent and reliable, besides proving that EEP had strong effect on entrepreneurial intention among the students. However, it was found that EEP had positive but weak significant influence on the students’ perceived behavioural control. This and many other studies that evaluated entrepreneurship education programmes simply pointed out the increasing interest among researchers and policy makers to determine the effectiveness of such programmes with the basic aim of employing the best practices in delivering entrepreneurship education.

Similarly, Zhang, Duysters, and Cloudt (2013), by means of Ajzen's theory of planned behaviour and Shapero's entrepreneurial event model and also entrepreneurial cognition theory, had set out to identify the relationships between entrepreneurship education, prior entrepreneurial exposure, perceived desirability and feasibility, as well as entrepreneurial intentions (EI) among university students. 10 universities were surveyed with 494 valid responses. By employing probit estimation, the results showed that perceived desirability highly affected EI, while insignificant impact was found with perceived feasibility. The study also revealed that experience showed significant negative impact, whereas, entrepreneurship education had significant influence on entrepreneurial intentions. Significant positive interactive effects also existed in gender, university type, and enrolment in entrepreneurship course as major on the relationship between entrepreneurship education and EI.

In another study, Fatoki (2014) evaluated the entrepreneurial intention of business students that have completed entrepreneurship and small business management modules. The study also compared to determine if significant difference existed in the entrepreneurial intention of students who have previous work experience with students without previous work experience. A convenience sampling was conducted among final year undergraduate students in the Department of Business Management of a South African university. The survey data was analysed using descriptive statistics and the T-test. The results showed that the business students have a considerable level of entrepreneurial intention. It was also found that there was a high but not significant difference between students with previous work experience compared to students without

previous work experience. The study has highlighted the importance of business and entrepreneurship education in improving entrepreneurial intention with particular reference to entrepreneurship in South Africa.

In a meta-analysis, Bae *et al.* (2014) analysed 73 studies with a total sample size of 37,285 individuals. They found a small but significant correlation between entrepreneurship education and entrepreneurial intentions ( $r = .143$ ). In addition, they further conducted an analysis to confirm if the entrepreneurship education and entrepreneurial intentions relationship was greater than the business education and entrepreneurial intentions relationship. The result yielded statistically significant difference. Hence, their study has established that entrepreneurship education was related more positively to a participant's entrepreneurial intentions than was business education.

Few recent studies have also lent support to previous ones in relation to entrepreneurship education and entrepreneurial intention relationship. For example, Westhead and Solesvik (2015) investigated the links between entrepreneurship education (EE) participation, alertness and risk-taking skills and the intensity of entrepreneurial intention relating to becoming an entrepreneur. They employed the human capital and socially learned theories to conceptualize and test the hypotheses that considered the potential moderating effect of gender and participation in EE. Business students participating in EE modules were compared with engineering students excluded from such programmes. Although, EE did not generate equal benefits for all students, the hierarchical regression analysis revealed that EE students reported high intensity of intention. In addition,

women were significantly less likely to report high intensity of intention this research has provided fresh insights relating to a relatively under-researched context for female entrepreneurship and have extended research on women's entrepreneurship by challenging the view that EE generates equal benefits for all students.

Similarly, based on the theory of planned behaviour (TPB), Miralles, Giones, and Riverola (2015) analysed the relationship between entrepreneurial knowledge and entrepreneurial intention, and the mediating effects of the TPB perceptual variables: personal attitude (PA), social norm (SN), and perceived behavioural-control (PBC). A structural equation model (SEM) was used to analyse the responses of a sample of 431 experienced individuals of working-age that completed an Entrepreneurial Intention Questionnaire (EIQ) developed by Liñan & Chen's (2009). The results indicated that entrepreneurial knowledge positively influences entrepreneurial intention and that this influence is mediated by the perceptual variables of the TPB model (PA, SN and PBC). Their study has contributed to the understanding of the entrepreneurial intention among experienced individuals and has proved the suitability of the use of TPB model to study individual entrepreneurial intention. Individual entrepreneurial knowledge hence becomes the key to fostering entrepreneurial behaviour among individuals of working age.

Additionally, Fayolle and Gailly (2015), conducted a study aimed at testing the impact of an entrepreneurship education programs (EEPs) on the entrepreneurial intention of students in higher education. The program which is aimed at raising the entrepreneurial

awareness of students was evaluated using Ajzen's theory of planned behaviour (1991 and 2002). A t-test analysis was employed to compare the mean values of the measures of intention and its antecedents before and after completion of the EEP. The results of the study showed no significant impact, on average, immediately after the EEP, while considering the whole sample. Although there seems to be a generally positive impact on the level of intention (+0.10), this impact was not significant enough for the whole sample ( $p < .16$ ). However, considering the impact of the EEP measured six months after the completion of the program, the study found on average a significant positive impact on attitudes and perceived behavioural control (+0.11 and +0.20,  $p < .03$  and  $p < .00$ , respectively). This study has therefore validated the efficacy of the program and has contributed to the literature on entrepreneurship education assessment.

In summary, the various studies reviewed displayed the significance of entrepreneurship education in inspiring students' entrepreneurial intention, which was expected would subsequently result in spring-up of businesses to provide self-employment and economic growth. However, the results had been inconsistent across studies as to the effect of entrepreneurship education on entrepreneurial intention, while some researchers found significant positive relationship (Kolvereid & Moen, 1997; Peterman & Kennedy, 2003; Fayolle, Gailly, & Lassas-Clerc, 2006b; Souitaris *et al.*, 2007b; Dohse & Walter, 2010; Izedonmi, 2010; Zainuddin & Rejab, 2010; Keat *et al.*, 2011; Lange *et al.*, 2011; Muofhe & Du Toit, 2011; Gerba, 2012; Owusu-Ansah & Poku, 2012; Zhang *et al.*, 2013; Westhead & Solesvik, 2015), others found weak or no relationship between entrepreneurship education and entrepreneurial intention (Byabashaija & Katono, 2011;

Karimi *et al.*, 2012; Lekoko *et al.*, 2012; Fayolle and Gailly, 2015). Thus, the call for more studies on such relationships to confirm previous findings, since previous studies are yet to established how valuable and effective entrepreneurship education is to the society (Albornoz & Rocco, 2009; Peterman & Kennedy, 2003).

Besides, in developing countries, especially African developing countries for example, there is scarcity of researches on entrepreneurship education and entrepreneurial intentions (Nabi & Liñán, 2011). It is, therefore, necessary to continue on this line and even more focus should be directed to its effectiveness. Effective entrepreneurship education seems to be the major concern among stakeholders, especially policy makers, university authorities, and trainers; hence the continuous evaluation of the programme by various researchers, including the government, to help in improving its development and implementation is vital. Consequently, the recommendation on the need for more studies to investigate the relationship between effective entrepreneurship education and entrepreneurial intention cannot be taken lightly (Gaddam, 2008; Solesvik *et al.*, 2012). Therefore, this study examined among university students the effect of Perceived effective entrepreneurship education on entrepreneurial intention, whereby evaluating entrepreneurship from the perspective of the students might provide a valid assessment.

## **2.5 Entrepreneurship Education and Creativity**

Creativity, which is defined as creating something that is novel and useful (Amabile, 1996, 1988), is also regarded as the combination and rearrangement of knowledge in the

minds of people that allow flexible thinking in the creation of the novel ideas that are unexpected, but rather useful (Chen, Li, Li, Zhang, & Dong, 2013). On the other hand, Godfrey (1996) considered that creativity is necessary for continuing reinventing businesses and suggested unleashing imagination of people through playfulness and fun. He also considered innovation as necessary to turn ideas into goods and services that are useful and beneficial to the market. Creativity, thus, is the basis of innovation (Dewett & Gruys, 2007; Almog-Bareket, 2011) and key to organisational growth.

Creativity and innovation are identified as key factors for the long-term success of business (Florida, 2002; Kerr & Lloyd, 2008). Therefore, in today's global economy, businesses and governments have recognised that creativity and innovation, as well as a more creative workforce, are necessary for a competitive advantage in any economy (McWilliam, 2007; Kerr & Lloyd, 2008; Almog-Bareket, 2011; Lu, Moulaye M'Hamed Taher, Chen, & Yao, 2011), especially in post global financial crisis situation (Ghosh, 2014).

Moreover, it has been understood from history that educational process design has certain implications for the capabilities of individuals to be engaged in innovative activities (Baumol, 2004). Baumol (2004) went further to explain that education, on one hand, provides to future entrepreneurs the analytical tools necessary for engaging in innovative related activities, and on the other hand, encourages creativity and imagination in a simplified manner. Hence, it is generally agreed that creativity is a skill that can be learned (Runco, 2004) and taught through support from activities, encouragement, and



support to individuals (Williamson, 2001). Besides, literature has also shown that creativity and innovation capacity can only be enhanced through continually generating knowledge and its applications (Williamson, 2001), hence, the strong dependency between the creation of knowledge and creativity (Chen *et al.*, 2011). Studies in the past have also long indicated that education should emphasize the development of creativity, and believed that creativity can be influenced, thus, so many kinds of training programmes have been suggested to develop creative thought processes (Craft, 2001). Nonetheless, many creativity enhancement activities have been tried in the past, but creativity training programmes available in schools are said to be more effective with high involvement of teachers (Benjamin, 1984).

Meanwhile, Tepper and Kuh (2011) believed that creativity can be nurtured by training and developing specific skill over time, as they also directed that the acquisition of such training can be found in arts-degree programmes where creativity skills are seriously cultivated. Hence, effective enterprise/entrepreneurship education must develop enterprising skills (Pittaway *et al.*, 2009b) and the key enterprising skill is the creative thinking (Gibb, 1993; Gibb, 2002a). That is why creativity development among students in business schools has become a matter of priority (Ghosh, 2014).

Besides, developing creative economy is of much concern for many countries and enterprises as they struggle for competitive advantage through creativity and innovation. Innovative competitive strategies are frequently employed in education to increase creativity, while policy makers in education are pushing for human capacity development

in order to promote creativity (Feng, 2013). In an Argument that relates creativity to technological innovation and economic prosperity, Florida (2002) emphasised the need to nurture creativity among university and college students. Therefore, researchers in the creativity domain have considered the link between teaching entrepreneurship and individual students' entrepreneurship behaviour (Feng, 2013).

In his description of creativity in higher education, Jackson (2008) emphasised that such type of education should develop fully the creative ability among students. He further explained that process-based learning strategies are effective in prompting students' creativity. Furthermore, a process-rich curriculum ensures more facilitated and collaborative models of teaching and learning that can nurture and enhance students' creativity (Jackson, 2008). In addition, Charyton and Merrill (2009) suggested that creativity skills in fostering innovation should be included in school curriculum to enable students to practice and develop this skill. Therefore, Gibson (2010) proposed some strategies for the higher education institutions to consider if they desire graduate students to be future leaders of the present era and society.

Moreover, studies have shown that certain educational approaches taken could foster creativity more than others. For example, the Montessori education, as reported by Dantus (1999), is indeed effective in developing life-long creative skills. He believes that self-expression, as encouraged in Montessori education, is a key in improving human authenticity and spirit. Furthermore, Edwards and Springate (1995) and Leach (2001) also suggested that the approach applied by Reggio Emilia in Italy in preschool education

has been successful partly due to its ability in helping the children to explore and solve problems.

There is, therefore, a shift from traditional-based teaching of entrepreneurship education to individuals, to a more action-oriented kind of teaching, which emphasizes learning by doing (Rasmussen & Sørheim, 2006). Nonetheless, some studies have call for more attention to entrepreneurship education rather than concentrating on only the technical aspects of entrepreneurship (Heinonen & Poikkijoki, 2006). In fact, a study by Zampetakis, Tsironis, and Moustakis (2007) indicated that proactivity and creativity development programmes are useful in increasing students' entrepreneurial desirability. Their study also suggested for a general support for creativity as a social desirable behaviour (Zampetakis, 2008). Consequently, the intention-based models support the inclusion of entrepreneurial desirability as a way of influencing the intention to create a business (Krueger Jr *et al.*, 2000).

With that, several attempts have been made in previous studies that determined whether entrepreneurship education is related to creativity. For example, Matlay, Smith, Collins, and Hannon (2006), considered the challenges that were involved in ushering well designed entrepreneurship education programmes in UK higher education institutions (HEIs). This was done by employing action research in two ways; one, by providing insight into the entrepreneurship education; and two, by evaluating the success and discussing the challenges of the programme within UK universities. Besides, the authors confirmed that the programmes designed for innovation are effective, but feared for its

implementation in HEIs given that there is lack of resources; the inability to train using synergistic methods; keeping the process blooming, and getting the right entrepreneurs to be part of the programme; as well as placing it properly in academic timetable and curriculum. Nevertheless, the authors suggested that to improve entrepreneurship behaviours among the graduates, it would be necessary to change the existing ways of teaching to synergistic learning techniques.

Apart from that, Ko and Butler (2007) indicated that though it is a complex process, creativity, as a desired organisational factor, is much needed especially in developing nations. Their work suggested that solid knowledge base, established social network, and dedication in exploring opportunities are essential to increase entrepreneurial behaviour. Besides, the interview with Hong Kong high technology entrepreneurs indicated that creativity occupies a central position in the process of entrepreneurship.

Meanwhile, Berglund and Wennberg (2006) contributed to the creativity acquiring process through entrepreneurship education. They determined creativity between two groups of masters' students in business and engineering schools by performing personality test and open-ended interviews. They found that the two groups had creative potential, but were channelled in different ways. While the engineering students channelled their creative ability to practical and incremental efforts, the business students were high in speculation and had been more market-focused.

In another study, Ling-li and Jun (2011) examined the level of interest in entrepreneurship among undergraduate students studying computing education in regional universities of China. Within the 3 years of running an entrepreneurship education programme, they study found that the programme was effective in increasing students' interest as far as entrepreneurial intention was concerned. The students were also more proactive and therefore, raised the students' entrepreneurial potential. Interestingly, the programme and some additional modules increased students' creativity, as well as innovative thinking, and in essence, improved their ability and the quest to innovate.

In a related study, DeTienne and Chandler (2004) examined the effectiveness of creativity-enhancing training programme as a way of providing support for entrepreneurship education. Creativity-enhancing training was found to significantly improve the ability of university students' to think creatively. Furthermore, it was found that students' creative thinking ability prior to training have positive relationship with the post-training outcomes. Hence, more understanding of the effect of creativity training is provided in this study.

In contrast, Oosterbeek, Van Praag, and Ijsselstein (2010) studied to determine whether an entrepreneurship education programme can increase college students' entrepreneurship skills and motivation. The programme was delivered to certain students at a particular place in the same school. The choice of location in the school was based on the proximity of the parents' place of residence. Their results surprisingly showed that the

programme did not influence the students' self-assessed entrepreneurial skills and there was an unexpected negative effect on their intention to become entrepreneurs.

Additionally, Matlay (2008) investigated the effect of entrepreneurship education on entrepreneurial outcomes. Specifically, they examined the influence of entrepreneurship education courses on a group of 64 graduates from eight UK HEIs. An annually semi-structured and in-depth telephone interviews were conducted for a period of ten years (1997 to 2006) to record the progress of the participant from graduation into entrepreneurship. The study results revealed that the expectations of the graduates in regards to the actual outcome of entrepreneurship education were not met. In other words, there was a disparity between the required outcomes and the final outcomes in relation to knowledge, entrepreneurial skills and attitudes. However, though their perceptions of desired and future educational needs were not equal, they appeared satisfied with what they acquired from the entrepreneurship education.

In another study, Matlay, Heinonen, Hytti, and Stenholm (2011) examined whether student creativity, various opportunity search strategies, and the viability of business ideas developed during an entrepreneurship education module were related. Data were collected from 117 students who participated in the pre- and post-programme surveys. Using structural equation modelling, the study found that there was no direct relationship between creativity and viability of business idea. It was, however, found that creativity influenced creative opportunity search strategies and the use of opportunity identification strategies based on the knowledge acquired. Again, considering knowledge acquisition,

creative opportunity search strategies mediated the relationship between creativity and viability of the business idea. This highlighted the importance of entrepreneurship education in influencing students' search for business opportunities, which then explains that creativity has influence on the viability of business idea.

Next, in a related study, Gafar, Kasim, and Martin (2013) indicated that developing students' ability for ideas generation way out of the theoretical teaching of the academic environment is necessary for entrepreneurship training in tertiary institutions of learning. Their study was based on the main principles of idea generation, emphasising on the best strategic approaches that would enable the facilitation in generating business ideas among graduating college students. They conducted a pilot study with real estate facilities management students from Universiti Tun Hussein Onn Malaysia (UTHM) in 2012 who were involved in business team projects partnership programme (BT-PPP). The BT-PPP is a practical business reality programme involving the collaboration of guest entrepreneurs and representatives from the industries, aimed at facilitating the establishment of business by graduating college students. The mean differential and paired-sample t-test analysis of the 72 students' responses were computed by using SPSS, and the findings portrayed that the BT-PPP had been positive in motivating entrepreneurial idea generation, interaction and networking, as well as entrepreneurial learning outcomes. Additionally, the programme showed positive effect on the students' self-employment intentions.

Nonetheless, DeTienne and Chandler (2004) argued that opportunity identification, as a skill, can be developed in the entrepreneurship classroom. Their study used a variation of the Solomon Four Group Designed experiment to exhibit that learning opportunity identification process was possible. The study also indicated that the process was capable of improving the number of ideas generated (creativity) and the innovativeness of those ideas.

Moreover, Doboli *et al.*, (2010) posited that it is essential for students to acquire the knowledge of the ability for identifying opportunities for technological innovation in highly complex and interdisciplinary domains. While noticing that entrepreneurship has engineered innovation and the discovery of many technological advances, they suggested that as complimentary to technical skill development, education in entrepreneurship for engineering or computing disciplines will possibly increase students' lifelong ability and the students' interest to innovate.

Meanwhile, Peterman and Kennedy (2003) examined the effect of enterprise education programme on the perceptions of the desirability and feasibility of business start-up by young school students. A control group of school students enrolled in the Young Achievement Australia (YAA) enterprise programme were tested before and after completion of the programme. The participants scored significantly high on their perception of desirability and feasibility in starting a business. It was observed that the level of change in the perception was as a result of good prior experience in business and experience in the enterprise education programme. Hence, this supported the exposure



among students to entrepreneurship education as additional mechanism for increasing the desirability and feasibility of business creation.

Other than that, Wilson *et al.*, (2007) examined the relationships between entrepreneurial self-efficacy, gender and entrepreneurial intentions among adolescents young and adult students who undertook master of business administration (MBA). The relationship between self-efficacy and career intentions was supported by the study. Similarly, the relationship between entrepreneurship education in MBA programmes and entrepreneurial self-efficacy was found to be stronger for women than for men. Consequently, the authors indicated that entrepreneurship education can champion the course by boosting low self-efficacy, and therefore, facilitate the process of creating successful business ventures by women.

In addition, it is known from theory that certain targeted education significantly influences the development of self-efficacy in individuals. For example, self confidence in people's ability to perform certain task successfully has been linked to mastery experiences, modelling, social persuasion, and judgments of individual's physiological states (Bandura, 1992). Thus, entrepreneurship education is said to significantly influence the development of individual self-efficacy by encouraging feasibility studies, developing business plans, and participating in business simulation or creating real business. Furthermore, entrepreneurship educational programmes that involve the use of guest speakers and case studies in its teaching methods can build self-efficacy by using role models (Wilson *et al.*, 2007). Besides, the authors explained that through social

persuasion and positive encouragement or feedback received by individuals from educators in entrepreneurship, self-efficacy is enhanced.

On top of that, Motaharrad, Arasteh, and Jafari (2014) investigated the impact of in-service entrepreneurship training on the improvement of mass media managers' creativity and innovation, risk-taking, perseverance, and competitive spirit in Islamic Republic of Iran Broadcasting (IRIB), Tehran, Iran. Forty production managers from IRIB volunteered and filled the developed questionnaire. The results of the variance and multi-covariance tests showed that the entrepreneurship training had significant impact on managers' creativity, risk-taking, perseverance, and competitive spirit.

Next, a study by Ayob, Hussain, Mustafa, and Shaarani (2011) used a construct-based model to investigate if experiential learning can nurture creativity and innovative thinking in students. Students and instructors from two faculties that participated in the Malaysian ROBOCON 2010 were assessed. These participants were assessed via focus group interviews, field observations, student questionnaires, student portfolio assessments and creativity test. It was found that the experiential learning activities that involved problem solving process are effective in nurturing and enhancing students' creativity. They concluded that supportive learning environment is capable of developing creativity.

In a combined training model that integrate creativity study and extenics support for promoting students' innovation capability, Chen *et al.*, (2013) provided a reference as a

guidance to improve postgraduate students' innovation capability. Exploring through teaching practice, they suggested a combined training model that would be useful in developing students' problem solving ability and the opportunity to apply for patents.

Gilbert (2012), on the other hand, examined the idea of developing an industry-engaged learning environment for educating young entrepreneurs and innovators. It is believed that this will produce entrepreneurship graduates who will be driving innovation in their work places or create a venture of their own. In a longitudinal research, the author used the mixed methods approach to prove that skills, capability, self-confidence, and self-efficacy developed, are indeed significant of the industry-engaged learning model in promoting innovation. Therefore, they have designed an avenue for breeding young entrepreneurship in universities.

Arguing for an art-based pedagogical process that includes creative learning, Kerr and Lloyd (2008) conducted a qualitative and quantitative analysis of an arts-based intervention for management development, known as Management Jazz, for a period of three years at a large Australian University. The authors presented three illustrative examples from the art-based learning with the Management Jazz programme. Overall, the findings showed that the artful learning opportunities increased individual's ability to be mindful of the creativity they possess, as well as in others. Support for arts-based management education is provided, as it increases creative ability, and therefore, improves managers and leaders to face the challenges of the 21st century business environment.

Moreover, creativity has been suggested to depend on the amount of knowledge an individual acquires (Sternberg, 2004). Hence, Ko and Butler (2007) argued that the ability of managers to put diverse information together and make meaning out of it is useful for creativity. The authors, therefore, reasoned that if creativity involves putting various unrelated information together, then it is important to use this type of knowledge in training entrepreneurial students to be creative.

Furthermore, Olivos, Álvarez, and Díaz (2013) evaluated a programme named “Yo Aprendoy Emprendo [I learn and take action]” conducted in Antofagasta, Chile. The programme was established to encourage the development of young students by providing them with the necessary tools to embrace an entrepreneurial culture in their lives, as well as to create business venture. Using a Propensity Score Matching to evaluate 150 students from five secondary schools, the results suggested that the programme was effective. The nature of the scores from the test administered to the students concerning creative imagination, narrative creativity and graphical creativity confirmed the effect of learning by action.

Similarly, Moriguchi, de Oliveira Filho, and Menck (2014) evaluated an entrepreneurship teaching at the Business Administration Bachelor’s Programme offered by the Faculty of Management and Business at the Federal University of Uberlândia, in Minas Gerais State, Brazil. They indicated that simultaneous combination of a marketing course with an entrepreneurship course had been capable of stimulating the involvement of students with new product innovation and development. Their study pointed further that the

introduction of self-learning, practical method approach in the courses, and the possibility of offering idea implementation with a pre-incubation project in the university's new enterprise incubator on campus, good opportunity is offered for the stimulation of entrepreneurial attitude and behaviour.

However, Feng (2013) provided contrary findings when he considered creative campus environment and entrepreneurship education. Using a case study of National Pingtung Institute of Commerce (NPIC) in Taiwan, a programme called "Application Program of Academic Innovation and Creativity" was introduced. After 3 years, the results showed an insignificant increase in the level of application for Information and Communication Technology (ICT) creative works. They suggested, however, that a more solid foundation for the on-going research in creativity and the theoretical knowledge base consolidation is essential for improving ICT application, local features, and educational practice of college creative education. They also emphasised that education in creativity increases students' creative ability, as well as enhances their problem-solving ability and their discipline aptitude.

In addition, to assist in the creativity development among students, Fields and Bisschoff (2013) developed a theoretical model to measure creativity on a tertiary education level. Through an experimental design, they reviewed several literatures to come up with constructs responsible for creativity behaviour in university students. They discovered twenty-eight creativity-influencing factors, but selected eleven most significant to develop a theoretical model. The outcome of their study was a theoretical model

developed to solve the problem of measuring creativity at the tertiary education level as a result of the many programmes involved, as well as the teaching and learning processes.

Apart from that, some studies have also been conducted to evaluate creativity training programmes. For example, Scott, Leritz, and Mumford (2004) conducted a quantitative meta-analysis of programme evaluation efforts by previous researchers. After reviewing a total of 70 studies, they found that properly designed creativity training programmes are capable of increasing performance generally across settings and target populations. Considering the factors that are relevant in the effectiveness of these training programmes, they discovered that based on the reality in a particular domain; focusing on developing cognitive skills and the heuristics involved in skill application are important for the success of such programmes. Their study pointed to the importance of developing creativity through educational and training interventions.

Similarly, Puccio, Firestien, Coyle, and Masucci (2006) conducted a review of previous researches on one of the well-known creative process models; the Creative Problem Solving (CPS). Their concern was on the aspect that reported the influence of CPS training involving professionals or students working and facing challenges of the real business world. In addition, they concentrated on reports that showed the benefits of applying CPS in real business life. This research is beneficial as it brought together both research and practice to show that the method of deliberately nurturing creative thinking works and to empirically support that creative process methods enhance creativity among employees.

Meanwhile, Birdi (2005) conducted an evaluation of different creativity training workshops conducted within an organisation and compared the influence of the training, as well as work environment factors in influencing employee innovation. A total of 71 questionnaires were returned by the participants in the creativity training programmes organised by a Civil Service organisation. Questions were asked about how training and work environmental factors changed their knowledge, attitudes, and use of creativity. The results showed that the training had a significant impact on the respondents' levels of creativity knowledge, attitudes, workplace idea generation, and idea implementation. It was also discovered that the impact of creativity training on idea implementation could be hampered by poor managerial support or an unfavourable departmental climate for innovation.

On the other hand, Chiu (2015) investigated the effects of over-inclusive thinking training (OTT) on creativity improvement. They regarded people who were engaged in over-inclusive thinking as having a broader conceptual framework. The authors conducted four experiments with randomly selected undergraduates and they were asked to do a particular task after the training. In Experiment 1, 40 students were randomly assigned to the OTT group or the control group and were required to complete categorization tasks after the training. It was found that the ability to engage in over-inclusive thinking was enhanced for the OTT participants group. As for Experiment 2, 42 undergraduates were randomly assigned to the OTT group or the control group and were asked to complete the Creative Thinking Test after the training. The results revealed that

the performance of the OTT group in terms of fluency and originality was higher than that of the control group.

Meanwhile, the third experiment (Experiment 3) involved 56 students who were assigned randomly to three groups of control, long-distance semantic OTT, and short-distance semantic OTT. At the end of the training, the participants were required to solve insight problems. It was found that the short-distance semantic OTT and the control group performed less in terms of insight problem solving compared to the long-distance semantic OTT group. On the other hand, Experiment 4, which was carried out with 50 undergraduates and randomly assigned to the OTT group or the control group, had 7 days of training. After the training of Creative Thinking Test was administered and the results revealed that there was no training effect observed on fluency or flexibility; the training effect on originality was maintained.

## **2.6 Entrepreneurship Education and Entrepreneurial Passion**

Understanding the role of behavioural and cognitive factors in new venture creation process is of crucial importance, as entrepreneurs play a fundamental role in new venture creation. Hence, careful consideration of the formation of their behaviour and cognition would be valuable in clarifying the complex process of entrepreneurship, including how opportunity recognition or creation actually happens, as well as how and what entrepreneurs learn from increasing experience in launching and operating new ventures (Baron, 2007).



Previous researches have connected prior knowledge, creativity, and cognitive mechanisms to the process of opportunity identification and exploitation. Following this, Corbett (2005) employed the uses of experiential learning theory to show the importance of learning within the process of entrepreneurship. Corbett (2005), however, suggested that to fully comprehend the nature of the entrepreneurial process, the question of how individuals learn and modes of learning influence opportunity identification, as well as exploitation should be understood. Their contributions have been found to have connection between knowledge, cognition, and creativity to show how appreciating differences in individual learning will strengthen entrepreneurship research. The study also pointed out the fact that learning perspective on entrepreneurship does not only push students to focus on discovering new opportunities, but also the passion for searching opportunities that best fit their identity as future entrepreneurs.

In addition, studies in the past have also established that relationship exists between passion and learning activity engagement (Bonneville-Roussy, Vallerand, & Bouffard, 2013). The activity engagement is described as involvement in a specifically designed educational activity that actually encourages persistence in higher education (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). As for entrepreneurial activity engagement, however, the entrepreneurial learning outcome for individual student is believed to be tangible, as well as emotional, as it produces the feeling and the experience of getting close to entrepreneurial activities, experiences, and emotions (Pittaway, Hannon, Gibb, & Thompson, 2009a).

It is also understood from literature that psychological characteristics affect individuals' entrepreneurial intention, while experiential learning techniques can be instrumental in changing emotional competences (Padilla-Meléndez, Fernández-Gámez, & Molina-Gómez, 2014). Learning and emotion move together as emotion is an essential factor in learning (Brown, 2000; Kyrö, 2008). Hence, entrepreneurship education should communicate entrepreneurship as an emotionally intense process where there is a mix of excitement with anxiety and fear, with common experiences of high commitment, uncertainty, and lack of control (Lackéus & Williams Middleton, 2011).

Meanwhile, Lackéus (2012) reviewed literature on emotions in entrepreneurship education and presented a model with equal emphasis on the three faculties of thoughts, actions, and emotions. He noted that scholars who have employed similar model have neglected the cognitive aspect. The concept has been used with different connotation from cognition, conation, and affection to thoughts, actions, and emotions. David Rae (2005) used the terms “passion”, “buzz”, “excitement”, and “fun” to describe emotion and the energy that goes into establishing and running an enterprise. The amount and the quality of this emotional engagement are the reasons for the survival of creative businesses (Lackéus, 2014).

Moreover, scholars have agreed that emotion-based perspectives are essential in considering new approaches to research and teaching entrepreneurship (Gibb, 2002b). This “emotional exposure plays a significant role in creating an environment within which effective student learning can be conducted (Pittaway & Cope, 2007).

Consequently, a learning environment that creates a near real situation in teaching activities will generate greater emotion (Guedes Gondim & Mutti, 2011). In conclusion, Souitaris, Zerbinati, and Al-Laham (2007a) emphasised that entrepreneurial attitudes and intentions are affected by inspiration drawn from entrepreneurship education. Hence, entrepreneurship education should be capable of building the passion among students to pursue entrepreneurial career.

In fact, numerous studies have attempted to empirically establish the relationship between education and passion or other factor, otherwise known as passion. For example, Halvari *et al.*, (2009) employed a Self-Determination Theory (SDT) process model to investigate the relationship involving physical activity and competitive performance among 190 students. It was proposed that perceived autonomy support from educators would positively relate to autonomous motivation, perceived competence, harmonious passion, and action orientation, and in turn, these factors (autonomous motivation, perceived competence, harmonious passion, and action orientation) would be positively related to involvement in physical activity and competitive performance. The author used LISREL to test the model and found that autonomy support was positively related to perceived competence, autonomous motivation, and action orientation. Also, the relationships between perceived competences (through harmonious passion), autonomous motivation, action orientation, and involvement in physical activity were supported.

Furthermore, relationships were established between perceived competence, autonomous motivation, and competitive performance. This study had been, therefore, significant in

contributing to our understanding that education is capable of developing passion in individuals, which invariably will lead to performing an activity. Hence, in the context of entrepreneurship education, it can be concluded that the perception of effectiveness in entrepreneurship education is capable of developing entrepreneurial passion in individuals, which invariably will lead to performing the activity (venture creation).

In another study, Bonneville-Roussy *et al.*, (2013) examined the role of autonomy support and passion in the persistence of students involved in higher education. The results of two studies that used music students and engaged the use of correlational, as well as short longitudinal designs, showed support for the hypotheses that autonomy support was highly related with harmonious passion and high persistence into the chosen career. Less autonomy-supportive environments were hypothesised to relate to obsessive passion and to hamper persistence in specific work. Although the paper linked the paths of autonomy support, passion, and persistence in school-related activities, the findings are valuable in other domains that require the investment of time and efforts. Particularly, teaching entrepreneurship education in autonomy supportive way could increase harmonious passion and persistence in the quest to create a business venture as a career in the student's life. Moreover, the findings revealed that autonomy support from instructors facilitated long-term engagement and persistence.

Apart from that, Dey and Steyaert (2007) argued against the concept of knowledge that overlooked the connection between knowing and passion. Their paper contributed to the discussion on the aims and the practices of learning and education in university business

schools. This they achieved by putting up ideas from educational philosophies that supported a more affirmative connection between passion and knowledge. Conceiving knowledge as invention, they examined the management education along Lyotard's principle of 'performativity'. A further probe into the relationship between passion and knowledge was examined through Derrida's idea of the 'unconditional university', whilst also showing its benefits. They, therefore, proposed a knowledge base that could help in developing learning practices by conceiving knowledge as holistic; involving personality and a fully concentrated process. Thus, the authors succeeded in destabilizing the system of education that gave less regards to desire and passion, and hence, considered such educational system as inappropriate.

Following a similar line of argument, and therefore, arguing for an action-based entrepreneurial learning, Lackéus and Williams Middleton (2011) asserted that action-based approach to learning assumed emotion as critical in the venture creation process. Their study investigated specific action-based education programme and entrepreneurship education, focusing on active creation of new ventures as the main learning point. The study was intended to improve the understanding on the structure, the components, the impact, and the learning outcomes of these programmes. Thus, the paper looked into the important characteristics of a venture creation programme.

Lackéus (2014) investigated the links between emotional events and developed entrepreneurial competencies in an action-based entrepreneurship education program where students create real-life ventures. The study design was longitudinal and three

engineering students were followed in a period of nine intensive months. The students were provided with mobile smartphone application software used in reporting emotional events and critical learning events. In addition to the reports, a semi-structured interview was carried out quarterly. The NVIVO data analysis software was used to identify links. The findings of the study indicated a large number of links between emotional events and developed entrepreneurial competencies. These links can be indirect measures in assessment of entrepreneurship education as well as representing empirical evidence for effective design principles of entrepreneurial education. The study also confirmed venture creation programs as a suitable environment for studying entrepreneurship.

Furthermore, Padilla-Meléndez *et al.*, (2014) discovered how experiential learning techniques, particularly after participating in an outdoor training experience, increased emotional competencies, which then influenced individual entrepreneurial intent among university students. The authors undertook both quantitative and qualitative analyses to obtain data from final year university students in measuring their emotional competences and entrepreneurial orientation, before and after the training experience. The results showed that changes in emotional competences, including self-management, social awareness, and relationship management, influenced entrepreneurial orientation most especially innovation and risk, which then influenced entrepreneurial intention. Thus, experiential learning techniques have been shown to be a useful strategy in influencing emotional competence and in extension, entrepreneurial passion.

In another study, Tasnim, Yahya and Zainuddin (2014) conducted a research to investigate what actually moved a successful entrepreneur to persevere and succeed in his endeavour. In other words, what is responsible for the affective commitment to the success of his venture? The in-depth interview conducted involved six successful entrepreneurs. The Interpretative Phenomenological Analysis was applied and displayed patterns, as well as themes, interpreted as affective entrepreneurial commitment. The findings revealed that affective commitment takes most part of the commitment that is responsible for influencing entrepreneurial success. The passion for pursuing goals, as well as personal and learned values, influenced positively the aspiration of the successful entrepreneurs to resist challenges and face risk involved in business. This paper pointed out the significance of understanding successful entrepreneur's mind-set, as it also helped in discovering factors that could lift commitment to a higher level. Thus, they provided an important clue in developing entrepreneurship among young prospective entrepreneurs, which suggested building curricula that included activities that would boost entrepreneurial commitment and build entrepreneurial passion.

In confirming the assertion that entrepreneurship education influences the intention to start a business, Souitaris *et al.*, (2007b) tested the impact of entrepreneurship programmes on entrepreneurial attitudes and intentions among science and engineering students by drawing on the theory of planned behaviour. Their results supported previous studies that entrepreneurship programmes did increase attitude and intention. In addition, the emotional element of inspiration was found to be the most influenced benefit of the

entrepreneurship programme. Hence, these findings contributed to the understanding of the practice of teaching entrepreneurship and its influence on entrepreneurial emotions.

In a recent study, Zampetakis, Lerakis, Kafetsios, and Moustakis (2015), used a pretest–posttest control group design to study the impact of an elective entrepreneurship training programme on emotional related variables. The data collected from 60 engineering students attending the programme and 51 control group participants, demonstrated an increase on students' entrepreneurial intentions and perceived behavioural control. An increase was also observed on students' negative anticipated affect (NA) in relation to new business creation. At the end of the program, anticipated NA related negatively to intention. The result is an indication that anticipated affect may be an important target variable for entrepreneurship education courses. This finding also offers certain practical implications for entrepreneurship education and training programmes (EE) designed to increase the number of entrepreneurs from the student population. This study also offers clue in assessing the effectiveness of the entrepreneurship education programme by capturing not only the programme's impact on students' intention but also on how it reduces their negative anticipated affect.

## **2.7 Creativity and Entrepreneurial Intention**

Closely related to innovation, a concept in entrepreneurship is creativity, which has been considered in various works because of its role in driving economy of nations (Litchfield, 2008; Wu, Chang, & Chen, 2008; Fritsch & Sorgner, 2013). Shackle in 1970 introduced



creativity and imagination in his work and linked it to entrepreneurship process, while arguing that in an uncertain situation, every entrepreneur applies his imagination to decide on the best possible action. This point highlights the importance of creativity and imagination as required skills in business decision making process and their roles in avoiding unfavourable consequences (Lourenço & Jayawarna, 2011).

The reason why people may choose to become or not to become entrepreneurs is attributed to the ability of thinking creatively or the perception that an individual poses creative ability. This involves recognizing the opportunities for creating new product or services or new ways of doing things that is worthwhile profitable, and so, the requirement for a successful entrepreneur (Schumpeter, 1934; Bird, 1989; Baron, 2004). Entrepreneurship, therefore, has been described as a good playing ground for creative individuals to be successful (Batchelor & Burch, 2012), because creativity involves novelty and usefulness, which are important to entrepreneurship (Amabile, 1996; Ward, 2004). Hence, individuals that are creative will engage more in entrepreneurship behaviour (Ward, 2004).

A term in cognitive process, creativity has been defined in different ways. This heterogeneity approach in the study of creativity presumes the reason why it has no generally accepted definition. However, most scholars agree that the definition of it refers to the development of idea that is both novel and useful (Amabile, 1996). Some dimensions of creativity reported are; technological creativity or innovation, cultural creativity and economic creativity or entrepreneurship. However, Florida (2004) argued

on the mutuality dependence of these creativity types. Creativity could also be considered as a dormant trait that lays creative behaviour (Eysenck, 1995), thus, indicating that exhibition of high creative performance is as a result of creative personality trait in individuals (Oldham & Cummings, 1996). Moreover, self-assessment of one's creativity disposition have been supported in several studies, for example, Batey, and Furnham (2008) argued that individuals understand themselves better when it comes to their own creative ability. Thus, opportunity should be giving for personal judgement of individual capability of generating new and valuable ideas that is necessary to succeed as entrepreneurs (Darini *et al.*, 2011).

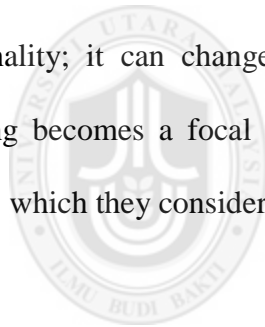
Furthermore, Hamidi, Wennberg, and Berglund (2008) employed social cognitive theory to study the entrepreneurial intention of participants of graduate entrepreneurship programme. Their emphasis was on students' creative potentials as it was related to their intention to engage in entrepreneurship. The study found that high score on a creativity test was positively related with entrepreneurial intentions. Given the strong support for the creativity variable in predicting entrepreneurship intention, their study also clearly indicated the need for considering creativity in entrepreneurial intention-based models. Though the authors indicated the weakness of using entrepreneurial intention as a dependent variable for its inability to distinguish between those who will actually become entrepreneurs or not, the researcher believed strongly that creativity disposition would build enormous amount of confidence that is very likely to yield expected result of becoming self-employed. Hence, the need for more studies on this highly neglected cognitive aspect of entrepreneurship is further emphasised.

Meanwhile, in a related study, Zampetakis, Gotsi, Andriopoulos, and Moustakis (2011) examined the connection between creativity and entrepreneurial intentions in young people, as well as the role of family and education in fostering the link. Surveying 180 undergraduate business students, the results showed that the more creative the students thought they were, the higher their entrepreneurial intentions were. Moreover, students' creativity was found to mediate fully the effect of family support for creativity on their intentions, whereas support for creativity in the university was found to have no effect on students' creativity or on their intentions. Also, entrepreneurship course attended was found to moderate the effect of individual creativity on entrepreneurship.

This being among the few studies that have investigated the impact of creativity on intention among students, while considering the fact that cognitive factors are key in influencing decision to be involve with entrepreneurship (Ward, 2004). Given that the role of creativity disposition in influencing entrepreneurial intentions has barely been measured in intention-based models (Hamidi *et al.*, 2008), this study examined the influence of individual students' creativity disposition on entrepreneurial intentions. While also believing strongly that even the entrepreneurship course attended that was found to moderate the effect of individual creativity on entrepreneurship can only be made effective by the university, hence, it is expected that the university has a role to play.

In a similar direction, Batchelor and Burch (2012) looked into 152 undergraduates if individual creativity predicted intentions to venture into entrepreneurship. They

particularly focused on individuals' ability to think divergently and creative personality. Their results revealed that divergent thinking predicted entrepreneurial intention, but creative personality only acted as a supporting factor, which suggested creative personality as less important. Besides, while appreciating the clue on divergent thinking and its relative importance, this study supposes that divergent thinking is still part of one's personality, because a person's intelligence seems to be only modestly related to creativity (Batey & Furnham, 2008). Moreover, although cognitive skill cannot be overlooked in entrepreneurial creativity (Block, Hoogerheide, & Thurik, 2013), other important factors of personality and good supporting environment could influence a person's creative ability (Fritsch & Sorgner, 2013). Hence, creativity is not a static personality; it can change and be enhanced (Eisenberger & Armeli, 1997), and so, training becomes a focal point for creative ability enhancement (Cropley & Cropley, 2000), which they considered the university to deliver in this direction.



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In another study, Lourenço, and Jayawarna (2011) drew on the TPB to examine the effect of creativity improvement training programme on the learning intention among 384 nascent entrepreneurs. They found those participants who perceived themselves as having higher perception of creativity also had higher tendencies to learn. Even though the study supported the application of TPB to entrepreneurship, it failed to link the perception of creativity to actual intention, which was the ultimate goal, but instead, emphasized that perceived creativity can improve learning habit. The study, therefore, opens an avenue for framing further question on how the perception of creativity can influence entrepreneurial intentions.

Similarly, due to the presence of Entrepreneurship Development Cell (EDC) in educational institutes and its role in developing entrepreneurial culture in academic institutions, Prakash *et al.* (2015) conducted a study on 1254 students of government and private institutes pursuing post-graduation in Commerce, Science and Humanities with/without exposure to EDC in the national capital region of India. The results of the study showed that the students exposed to the activities of EDC were significantly higher on Innovation as compared to the students who did not acquire such exposure. In addition, despite not taking business subjects, science and humanities students in private institutes exhibited a tendency of performing high on entrepreneurial activities because they are exposed to Entrepreneurial Development Cells.

Apart from that, Fatoki (2010) identified in a study of entrepreneurial intention among South African final year graduating students, that creativity was a motivator of entrepreneurial intention. In contrast, Luca, Cazan, and Tomulescu (2012) explored the differences based on personality between 215 participants in entrepreneurship education and non-participants. The results indicated some personality traits as efficient predictors in the involvement in entrepreneurship training, except creativity among few others that had no significant predictive value for entrepreneurship development behaviour. The contradiction between the findings on the relationship between creativity and entrepreneurship has been a clear indication that more studies in this line are required to confirm previous findings; it is also a pointer to the need of introducing certain other variables, especially in the intention models, which could possibly account for variations of results.

## 2.8 Entrepreneurial Passion and Entrepreneurial Intentions

The important role of passion in encouraging persistent pursuit and achievement of an individual's desired goal has attracted the attention of psychologists and recently, entrepreneurship scholars. Passion or "love" for something (Shane, Locke, & Collins, 2003; Baum & Locke, 2004), which has the connotation of affective feelings, particularly intense positive feelings (Cardon, Wincent, *et al.*, 2009), has been defined in various ways by scholars, for example, Vallerand *et al.*, (2003) define passion as a strong inclination towards an activity that people like, that they find important, and in which they invest time and energy tirelessly. The motivation that is provided by passion invigorates the energy necessary to sustain any difficulty that may come the way of executing such activity (Vallerand *et al.*, 2008).

Therefore, passion provides self-fulfilment, improves welfare, and offers meaning to individuals' daily life (Vallerand *et al.*, 2003). Making the same claim, Donahue (2008) believed that passion is what makes life of people more fulfilling and really worth living. It seems then that passion has an element of motivation because it inspires people to work with great zeal, making the whole exercise easy and fun (Hackman & Oldham, 1976; Chang, 2001). The motivational construct has also the components of; affective, cognitive, and behavioural elements (Chen *et al.*, 2009). This can be corroborated by the definition suggested by Perttula (2003), whereby passion for work refers to a psychological state involving strong positive emotional arousal, internal force, and full commitment with meaningful work activities that are personal.

Another definition that emphasises on positive affect is Smilor's (1997), who defined passion as the keen interest and pleasure that is realized from the untiring pursuit of a cherish able, challenging, and enriching purpose, which points to the affective experience that comes with performing an activity that has value (Chen *et al.*, 2009). Passion, therefore, influences individual behaviour (Donahue, 2008; Cardon, Sudek, *et al.*, 2009; Murnieks *et al.*, 2011). It is an "all-alone" construct that distinctively accounts for variance in entrepreneurial behaviour (Murnieks *et al.*, 2011).

Like the "activity" in Vallerand's, as well as definitions outlined by the others to entrepreneurship, scholars of entrepreneurship have defined and given meaning to entrepreneurship in that direction, for example, Baum and Locke (2004) asserted that entrepreneurial passion drives people's desire to engage in entrepreneurship related activities. Cardon *et al.*, (2009), on another hand, expressed entrepreneurial passion as "consciously accessible with intense positive feelings related to the entrepreneurial activities that are meaningful and salient to the self-identity of the entrepreneur". While also building on social psychological and entrepreneurship literatures, Chen, Yao, and Kotha (2009) defined entrepreneurial passion as the extreme emotional condition of an entrepreneur manifested through cognitive and behavioural action that are personally valuable.

Recently, Murnieks *et al.*, (2011) defined entrepreneurial passion as a strong inclination towards enjoyable, important, and meaningful activities related to being an entrepreneur. Passion is a necessary factor in entrepreneurship (Bird, 1988; Cardon, Wincent, *et al.*,

2009; Cardon *et al.*, 2013), driving creativity and encouraging persistence, especially in difficult times among entrepreneurs (Cardon *et al.*, 2005; Murnieks & Mosakowski, 2006). Thus, passion is the clearly observable happening of entrepreneurial process (Smilor, 1997), whereby its absence causes entrepreneurial disconnection, and thereby, leading to the collapse of venture (Cardon *et al.*, 2005). Consequently, passion needs to be built at the early stage of venture creation since it is quite essential to successful entrepreneurship activities.

Another quite interesting aspect of the definition of passion, as presented by Cardon *et al.*, (2009), to mean “consciously accessible intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur”, is the issue concerning the extreme positive feelings and self-identity. While the intense positive feelings are directed towards activities that are of importance to individuals, and hence, more enduring (Wincent, Örtqvist, & Drnovsek, 2008); the self-identity is concerned about the realisation of the central role that the activity plays in one’s identity (Cardon *et al.*, 2013). This shows that identity centrality will differ among individuals, leading to entrepreneurs engaging in selected activities they identify more personally with, and disengaging from the activities with which they do not (Cardon *et al.*, 2013). However, both intense positive feelings and the activity central to self-identity are embedded in the entrepreneurial domains of founding, inventing, and developing (Cardon *et al.*, 2013).



The inventing domain is characterized by individuals with passion for searching opportunities, delighted for always being on the run to usher in new products or services or new ways of doing things to solve current problems (Cardon, Wincent, *et al.*, 2009; Cardon *et al.*, 2013). In addition, the passion for founding, as discussed by Cardon *et al.*, (2009), has to do with organisation of human, financial, and social resources required to create a new venture. Most entrepreneurs are driven by the desire to find a new venture (Zimmer, 1986), which signifies the achievement of being able to create something tangible that can be attributed to them (Katz & Gartner, 1988). Such achievement of founding an organisation could be the central role reflecting particular self-identity of an individual entrepreneur (Cardon, 2008).

After founding is developing the organisation beyond its initial survival and successes, and it comes with the passion of growth and expansion (Cardon, Wincent, *et al.*, 2009). Entrepreneurs who are motivated by growing and expanding ventures (Cliff, 1998) always devise ways that will continue to promote the expansion of their organisations (Baum & Locke, 2004). Hence, entrepreneurs who experience passion for developing their own ventures might feel quite cherished in making return on their investments by generating more sales, engaging employees and other stakeholders, or even acquiring new investors to support the businesses (Cardon *et al.*, 2013). This study must quickly point out that passion for developing does not necessarily mean to be possessed only by those who have founded their own ventures, as some individuals might have passion for developing what others have founded to a greater height (Cardon *et al.*, 2013). However, this study had been more concerned with the first two domains, given the nature of the

proposed sample of university students, this study believed that the passion for inventing and founding is more likely to be experienced and nurtured prior to the real activity while they are still students hoping to be entrepreneurs in those senses.

Another interesting point to note about passion is its classification into Harmonious passion (HP) and Obsessive passion (OP), which are developed based on the internalization process that takes place within individuals in relation to taking an action (Vallerand *et al.*, 2003). Putting these clearly, Vallerand *et al.*, (2003; 2008) explained that Harmonious passion (HP) is seen as a self-directed internalization, which guides individuals to involve in a job that they like. There is an inner motivation to willingly take on such action without any compulsion and be happy to do so. The passionate activity, thus, is chosen in harmony with one's life purpose and it is assumed to result in positive affect and reduces negative affect when engaging in the task. On the other hand, they explained that Obsessive passion (OP) as the restricted internalization to engage in a job. It creates a sort of internal compelling force to engage in the activity that the individual likes. This internal pressure to engage in the passionate activity creates a complex situation in mind of a person to attempt to disengage from the thought of such activity. Even though both types of passions are said to correlate moderately and positively, they both entail distinct types of task engagement, with harmonious passion supporting health adaptation and obsessive passion causing negative affect and less adaptive (Vallerand *et al.*, 2008). The present study had been much in line with the conceptualization of entrepreneurial passion as harmonious, resulting in positive affect and engaging willingly in a chosen enjoyable activity.

Some studies have also conceptually and empirically investigated the role of entrepreneurial passion or its proxies in entrepreneurship process, and especially in relation to variables like venture growth, behaviour, and or entrepreneurial action. For example, Cardon *et al.*, (2005) metaphorically connected entrepreneurship to the process of parenting, since most entrepreneurs are emotional in their activities. They related business to babies and examined the various aspects of the progression of children and ventures, besides introducing the idea of parenting that comes with nurturing, passion or love, and possible abandonment or abuse, while also drawing attention to the ideas of passion, identification, and attachment in the entrepreneurial circumstances. Interested in how entrepreneurs' passion can also be contagion to others, Cardon (2008) developed a model and displayed how passion may be transferred from entrepreneur to employees. In another study, Cardon *et al.* (2009) conceptualized the nature of entrepreneurial passion related with salient entrepreneurial role identities, built from existing literature. They theorized to clarify the mechanism behind the experience of entrepreneurial passion that provides the rational of how cognitions and behaviours work while pursuing entrepreneurial effectiveness.

In addition, Baron (2008) presented a theoretical framework showing the role of affect in key aspects of entrepreneurship like opportunity recognition and resource acquisition. Thus, suggesting that affect influences several aspects of entrepreneurs' cognition, and therefore, an important element of the entrepreneurial process. Also in a related study, Hayton and Cholakova (2012), concerned with how affect and cognition impact on judgment and decision making, developed a model to explain the function of affect in

forming idea and the intention to build idea on entrepreneurial activity. They proposed that affect is related to idea perception in entrepreneurship, which has an impact on memory, attention, and creativity. A link was also proposed between affect and the intention to accomplish the ideas. Implication was, however, drawn for cognitive and psychological perspectives on entrepreneurship.

Meanwhile, a study by Vallerand *et al.*, (2007) tested the dualistic model of passion, considering performance accomplishment in the fields of dramatic arts and psychology. Study 1, which involved 143 students from dramatic arts in different colleges and theatre schools in the Quebec area, tested the hypotheses that both harmonious and obsessive passions led to deliberate practice, which in turn, led to performance. On the other hand, study 2, which consisted of 130 sampled undergraduate psychology students, examined the important function of achievement goals in relating passion to conscious practice, and eventually, to performance. The results from the two studies validated the passion model. In both studies also, deliberate practice had a direct positive influence on performance attainment. Also in both studies, harmonious passion was positively related to subjective well-being, whereas obsessive passion was either unrelated to subjective well-being in study 1 or negatively related to subjective well-being in study 2.

In a similar and related study, Vallerand *et al.*, (2008) also tested a performance-attainment model derived from the Dualistic Model of Passion. Using structural equation modelling, the model was tested in two studies, with study 1 involving 184 high school basketball players, whereas study 2 was conducted among 67 coordinated swimming and

water-polo athletes. In the first study, both harmonious and obsessive passions positively predicted conscious practice, and subsequently, predicted positive and objective performance. In study 2, the two passions showed different relationships in terms of achievement goals and subjective well-being. Harmonious passion positively predicted mastery goal pursuit and subjective well-being, but obsessive passion predicted performance-approach and performance-avoidance goals, besides being unrelated to subjective well-being.

Meanwhile, Baum and Locke (2004) empirically investigated the proposed relationships between entrepreneurial traits, skill (passion, tenacity, and new resource skill), and situational specific motivation (communicated vision, self-efficacy, and goals) to venture growth. They collected data from a 6-year study from 229 entrepreneurs (chief executive officers) and 106 associates in a single industry. Their analysis, which employed structural equation modelling, revealed that Goals, self-efficacy, and communicated vision had a direct impact on venture growth and these same factors mediated the influences of passion, tenacity, and new resource skill on venture growth.

Nevertheless, Kickul and Krueger (2005) took the first attempt to consider and to test models of cognitive style, along with culture, gender, social norms, and entrepreneurial intensity, to portray how these factors influence the entrepreneurial intentions process. A sample of 528 university students enrolled in entrepreneurship programmes from Finland, Norway, and Russia completed measures of cognitive style, self-efficacy, entrepreneurial intentionality and entrepreneurial intensity. Their results suggested that differences in

cognitive style in the mixed contextual factors had an impact different from that on entrepreneurial intention. The study also suggested that entrepreneurial intensity, which is a proxy for entrepreneurial passion, was related with intentions for intuitive; impacting more on the intentions of intuitive than analytics' intentions.

Furthermore, Chen *et al.*, (2009) investigated the extent to which venture capitalists' perceptions of entrepreneurial passion displayed by an entrepreneur influenced the venture capitalists' investment decisions. They developed a measure of perceived passion and preparedness using an inductive and qualitative approach. Their laboratory experiment and a field study revealed consistently that preparedness, and not passion, positively influenced venture capitalists' decisions to fund ventures.

In an attempt to improve the understanding of the formation of entrepreneurial intention, De Clercq *et al.*, (2011) examined the roles of learning orientation and passion for work as moderators of the perception of one's ability to be a successful entrepreneur, and the perceived attractiveness of becoming an entrepreneur. They surveyed 946 university students to show that learning orientation and passion for work strengthened the role of the feasibility and the desirability factors considered in influencing entrepreneurial intention.

Murnieks *et al.*, (2011), on the other hand, investigated the influence of entrepreneurial identities on entrepreneurial passion and the relationship of entrepreneurial passion with

behaviour. Using structural equation modelling, the results from the responses of 247 entrepreneurs revealed that entrepreneurial passion rose and fell in connection with entrepreneurial identity centrality. Entrepreneurial passion was also found to influence entrepreneurial behaviour through mediated relationship involving intrinsic motivation, self-efficacy, and positive affect.

Furthermore, Murnieks, Mosakowski, and Cardon (2014), integrated identity theory with the literature related to passion to investigate the possible pathways through which entrepreneurial identities might influence passion, as well as the relationship between entrepreneurs' passion and behaviour. Using structural equation modelling, responses from 221 entrepreneurs suggest that passion rises and falls in connection with entrepreneurial identity centrality. The study also found that passion is associated with individual entrepreneurial behaviour and entrepreneurial self-efficacy. Their study is an initial stage for investigating the factors that may influence the development of entrepreneurs' passion as well as the particular mechanisms through which passion encourages entrepreneurial action.

In addition, Cardon *et al.*, (2013) conducted a number of empirical studies employing samples from suitable populations to develop and to validate the instrument that took into account entrepreneurial passion with its dimensions. Their study revealed entrepreneurial passion dimensions of intense positive feelings and identity centrality in the domains of inventing, founding, and developing as different conceptually and empirically from one another, they are also distinct from other types of emotions and cognitions that also

function in entrepreneurship. The outcome also showed that a good measure of entrepreneurial passion integrated the relationship between the feelings and the centrality of the entrepreneur's self-identity for each domain.

While efforts were exerted to study the role of entrepreneurial passion in entrepreneurial process, very few empirical studies have tried successfully to improve on the understanding of this affective construct in relation to the cognitive process of entrepreneurial behaviour, particularly establishing a direct link between entrepreneurial passion and entrepreneurial intention, which is believed to immediately predict entrepreneurial behaviour (Bagozzi *et al.*, 1989; Krueger Jr *et al.*, 2000). The work of Chen *et al.*, (2009), for example, was an observation of passion by venture capitalist and may not necessarily reflect the exact experience of passion among entrepreneurs (Cardon *et al.*, 2013). A study by Cardon *et al.* (2013), however, developed an instrument that captured the exact measures of experience of passion, which the current study adopted, including the dimensions in all domains, except that of developing. This is because; the researcher believed that developing is not an immediate reality of passion in the proposed sample of university students while still in school, moreover, in the process of nurturing entrepreneurial passion, what seems to matter most and more immediate is the passion for inventing new products and founding new organisations. Cardon *et al.*, (2013), nevertheless, only stopped at the level of developing and validating the instrument to capture entrepreneurial passion and its dimensions, which was instrumental to this study and other future studies, but did not extend to see the impact of entrepreneurial passion on other possible outcomes.



While Baum and Locke (2004) investigated the effect of passion on venture growth, Chen *et al.*, (2009) examined the impact of perceived entrepreneurial passion on venture capitalist decision to invest in a new business. These and most studies, however, focused on the relationship between individual entrepreneurial passion and organisational outcomes (Murnieks *et al.*, 2011) or otherwise, hardly has emphasis been given to understand the relationship between entrepreneurial passion and entrepreneurial intention. However, studies that relates passion to intention were concerned with an indirect relationship i.e. observing the impact of passion as a moderator to other antecedent factors to intention (De Clercq *et al.*, 2011) or considered passion as an antecedent to other variables that impact on intention (Vallerand *et al.*, 2007; Murnieks *et al.*, 2011).

Nevertheless, in a quiet recent study, Pfeifer, Šarlija, and Zekić Sušac (2016), conducted an international study on entrepreneurial self-efficacy, identity, and education. Business students from a public university in Croatia participated in the survey. The results of the empirical research indicated that the major predictors of the entrepreneurial intentions in Croatia are strength of entrepreneurial identity aspiration (a key issue in entrepreneurial passion) and entrepreneurial self-efficacy. The two constructs also mediate personal, situational, or contextual factors, including education. This study lent support to a number of social cognitive career theory which suggested the interaction between control variables and main constructs such as self-efficacy, positive outcome expectations, and entrepreneurial identity. The findings therefore have contributed empirically in validating the theoretical framework derived from different contexts.

On the other hand, Zampetakis, Anagnosti, and Rozakis (2013), utilised Ajzen's (1991) theory of planned behaviour (TPB) to investigate entrepreneurial intention of 65 agricultural students from the Agricultural University of Athens, Greece. Using also the path analysis, the results supported previous studies that employed TPB to predict entrepreneurial intentions. In particular the result suggested that students' attitudes towards entrepreneurship as well as their perceived behavioural control (PBC) are strong predictor of entrepreneurial intentions. However, the role of subjective norm (SN) in predicting intentions was negative and statistically significant effect. Furthermore, they investigated the role of anticipated emotional ambivalence in students' entrepreneurial intention. The results suggested that anticipated emotional ambivalence from nascent entrepreneurship i.e., students' future oriented emotions relating to the expectancy of feeling both positive and negative affect related negatively to perceived behavioural control. This further suggested that anticipating negative affect is related to students' beliefs that they not are capable of performing a given entrepreneurial behaviour. Hence, students emotion i.e. passion about entrepreneurship is critical in determining students future entrepreneurial behaviour. This study thus examined the relationship between entrepreneurial passion (passion for inventing and passion for founding) and entrepreneurial intentions.

## 2.9 University Support and Entrepreneurial Intention

As Drucker (1993) relates, what makes entrepreneurship effective may not be economical, but changes that are institutional. Universities are seen as promoters of entrepreneurship by providing entrepreneurship education and complimentary supports that are necessary to boost the potential intentions of venture creation and subsequent growth; hence, they are key players in the provision of training (OECD, 2010; Romero, Petrescu, & Balalia, 2011). A good example of company creation by university alumni can be seen in the light of US business schools, where these schools alumni has established quite a number of ventures, indicating excellence in their entrepreneurship delivery (Lüthje & Franke, 2003). This, however, is not limited to US business schools alone, because other studies indicated that universities elsewhere could have the same impact on encouraging company creation (Harhoff, 1999). When high quality entrepreneurship programmes are delivered, higher number of entrepreneurs will emerge (Wang & Verzat, 2011).

Besides, personality traits are said to lose their strength in affecting entrepreneurial intentions because individuals operate within a particular environmental situation that may be responsible for the weak efficacy of personality characteristics, as found in previous studies (Franke & Lüthje, 2004; Schwarz *et al.*, 2009). According to Bechard, and Toulouse (1998), what is responsible for influencing students' decision to become entrepreneurs is embedded in the universities. In affirmation, Franke, and Luthje (2004) emphasised that universities do have control over some factors that can enhance students'

entrepreneurial intentions; they initiated entrepreneurial spirit by arranging and providing a conducive, creative, and supportive atmosphere that is necessary for imaginative thinking, which is useful and applicable. Accordingly, the university environment is the right place to mould and influence students to build entrepreneurial intention (Franke & Lüthje, 2004). Therefore, environmental perception guides individual behaviour (OECD, 2010).

Moreover, entrepreneurship career development can be supported by universities (Turker & Selcuk, 2009) through the engagement of role models in training, provision of entrepreneurial support network, and encouragement of business plan competitions among students (Lüthje & Franke, 2003). For example, it was found that students who participated in business plan competition reported that it had an impact on their career choice decision (Fleming, 1994). According to Keat *et al.*, (2011), and Wang, and Verzat (2011), universities play significant roles in entrepreneurial curriculum and content development, as well as making entrepreneurship appealing to students. Other studies have also shown the relevance of some factors in developing entrepreneurship, some of which are; environmental culture, established dedicated facilities meant for entrepreneurship related activities, and other resources to aid idea generation and innovation among students (Autio *et al.*, 1997; Fayolle, 2000). The entrepreneurial university is, therefore, seen as an important channel for regional economic and social development, mainly because it is considered to be the source of recognizing entrepreneurial opportunities, and thus, drivers of subsequent entrepreneurial action (Edelman & Yli-Renko, 2010; Urbano & Guerrero, 2013). However, despite efforts by

some scholars to discuss the impact of university environment on entrepreneurial intentions, the understanding of the role of university as it enhances the process of entrepreneurial intentions still remains unclear.

Some empirical studies on the role of university, as well as organisational environments in the entrepreneurship process, are also presented. For example, Luthje and Franke (2003) investigated if stable personal characteristics or perceptions of background founding conditions influenced the intention to establish personal venture. The study validated and endorsed the covariance structure model tested on 512 students at the MIT School of Engineering. Personality traits had an indirect influence on intention by directly impacting on the attitude towards self-employment, which was strongly related to intention to start a new venture. Additionally, perceived barriers and support factors in the entrepreneurship setting were found to directly affect entrepreneurial intention. Similarly, Turker and Selcuk (2009) examined the impacts of some identified contextual factors on entrepreneurial intention among university students by developing a model and testing it on a sample of 300 university students in Turkey. The three factors (educational, relational, and structural supports) were deemed to influence entrepreneurial intention. Their results showed that educational and structural supports had an impact on entrepreneurial intention among students.

On the other hand, Tanveer, Shafique, Akbar, and Rizvi (2013) evaluated the impact of personal and contextual factors on entrepreneurial intention among 114 students from the Department of Management Sciences of Islamia University Bahawalpur in Pakistan. The

questionnaire administered was analysed using regression analysis, correlation, ANOVA, and descriptive statistics. The results revealed that the entrepreneurial intention of students' was moderate, as only personal experience and family business background had positive impact. The study suggested that social, capital, government, and environment were responsible for retarding the increase in entrepreneurship behaviour. To emphasize their significant roles, the study also called on policy makers, universities, and practitioners to support the process by involving role models in training and providing an atmosphere that is conducive to boost entrepreneurial intention.

Furthermore, in their quest to determine the essential factors influencing students' intention to create new venture, Schwarz *et al.*, (2009) employed the theory of planned behaviour by Ajzen and the intention model of Autio to develop a model of entrepreneurial intention that was based on human and environmental factors. The model considered three constructs to affect entrepreneurial intention; the general attitudes to money, competitiveness, and change; the attitude towards entrepreneurship; as well as the consideration of the university environment and regional start-up infrastructure. In addition, an electronic survey was conducted among 2, 124 students of law, medicine, technical, natural, business, and social science from seven universities in Austria. Using multiple linear regression analysis, it was found that general attitudes to money and change, as well as attitude towards entrepreneurship, were significant. The way the students see the university environment was also found to influence the students' entrepreneurial intention. However, the study called for more studies to highlight the interaction between personal and environmental factors.

Other than that, Edelman and Yli-Renko (2010) empirically examined the relationships between environmental conditions, entrepreneurial perceptions, entrepreneurial action, and the final outcomes. They explained the roles that objective environmental conditions, as well as entrepreneurial perceptions of opportunity and resource availability, play in firm creation. Based on longitudinal data on nascent entrepreneurs, the study found that entrepreneurs' opportunity perceptions mediated between objective characteristics of the environment and the entrepreneurs' efforts to establish a business. Surprisingly, perceived resource availability did not mediate the relationship between the objective environmental conditions and the expected outcome of action.

Also, in their pursuit to investigate how entrepreneurial environments and activities could influence people within the academic setting who had no initial entrepreneurial plan, Geissler, Jahn, Loebel, and Zanger (2012) considered the university environment within the entrepreneurial development process of opportunity identification, enhancement of entrepreneurial intention, and nascent entrepreneurial behaviour. An online survey was conducted on students from two German universities. The regression analyses indicated that the perception of the university entrepreneurial climate as supportive, influenced opportunity identification, and then, increased entrepreneurial intention, which may result in entrepreneurial behaviour. It was observed, however, that the entrepreneurial climate had no direct impact on intention formation. This suggests that the university environment was isolated from those processes and can only be a motivator. Recognizing the contribution of university in developing the knowledge to identify entrepreneurial opportunities, Urbano and Guerrero (2013) determined to increase the understanding of

the socioeconomic impacts of the entrepreneurial university, employed institutional economics, resource-based view, and endogenous growth approaches. A case study methodology was used to portray the experience of entrepreneurial universities in the European Region of Catalonia and Spain. Attentions were drawn to the implications that were important in driving entrepreneurial activities of universities so as to provide the knowledge required in the modern economy.

Meanwhile, in a qualitative study, Maina (2011) examined the role of colleges in influencing entrepreneurial intentions among young people. The study found that the college environment and the exposure to entrepreneurship experiences indirectly had an impact on entrepreneurial intentions with influence on self-efficacy and perceptions of desirability.

Nevertheless, Sesen (2013) developed a model of entrepreneurial intentions, including individual and environmental factors, to test and to compare their efficacy in influencing the entrepreneurial intentions among university students from two Turkish universities. Questionnaires that were administered to 356 sampled students of business administration, law, and health sciences faculties across the universities were analysed using correlation and regression. The results showed that two individual factors (entrepreneurial self-efficacy and locus of control) and two environmental factors (access to capital and social network) significantly influenced students' entrepreneurial intentions. However, the university environment failed to significantly impact on entrepreneurial intentions among students.



In a related study, Hegarty and Jones (2008) determined how pedagogy could hinder students from becoming entrepreneurs, and observed the pragmatic approach of enterprise programmes in Ireland and Australia. The reality about enterprise education came to light as practical-based entrepreneurial learning and the support of both government and university failed to yield the expected result of graduate engagement in entrepreneurship behaviour in both situations. There also seemed to be a mismatch between the programme and the individual student's personality, further revealing the complexity of graduate entrepreneurship. The study also discouraged the commercialization strategies thought to be essential to university programme in developing capacity among students. Attention was, however, drawn to the evaluation of the effectiveness of entrepreneurship education and reconsideration of applying support services by universities.



Considering the fact that several attempts have been directed towards improving the role of university graduates as creators of business ventures, Franke, and Lüthje (2004) related the entrepreneurial intentions of students from Vienna University of Economics and Business Administration and University of Munich with that of Massachusetts Institute of Technology (MIT), a leading institution in running entrepreneurship programme. Nonetheless, the results showed a different path to students' entrepreneurial spirit in all the universities. The founding intentions among students in Munich and Vienna were low as a result of possible lack of unique entrepreneurship education programme. In seemingly support of developing a unique entrepreneurship education programme, Fayolle, Gailly, and Lassas-Clerc (2006a) developed a framework to evaluate the design

of entrepreneurship education programmes (EEP) based on the theory of planned behaviour (TPB). The independent variables were the characteristics of the EEP, including institutional settings, as well as teaching and training approaches, whereas the dependent variables were the antecedents of entrepreneurial behaviour. The study indicated that the EEP strongly influenced entrepreneurial intention of the students, but its impact on perceived behavioural control was weak.

Grimaldi and Sobrero (2006), on the other hand, discussed and compared the effects of university-level support mechanisms to encourage academic start-ups with local-context support mechanisms available to starts-up outside the university. Sampling 74 US academic starts-up, the study showed that the university-level support mechanisms are considered important when it is unique. Academic starts-up, as a result of university-level support mechanisms, had been 2.6 times more likely to access venture capital funding than starts-up supported from the local environment, whereby this made their growth in the first years of activity 22% higher than non-venture-backed starts-up.

In another related study, Coduras, Urbano, Rojas, and Martínez (2008) statistically analysed the relationship between entrepreneurship university support and the level of entrepreneurial activity in Spain. Data were obtained from the National Spanish GEM (Global Entrepreneurship Monitor), which was analysed with descriptive statistics, ANOVA, correlation, linear regression, non-linear regression, and logit. The study discovered that there was no significant statistical relationship between entrepreneurship

universities support and entrepreneurial level of activity in Spain. However, entrepreneurial intention was found to be statistically related with universities support.

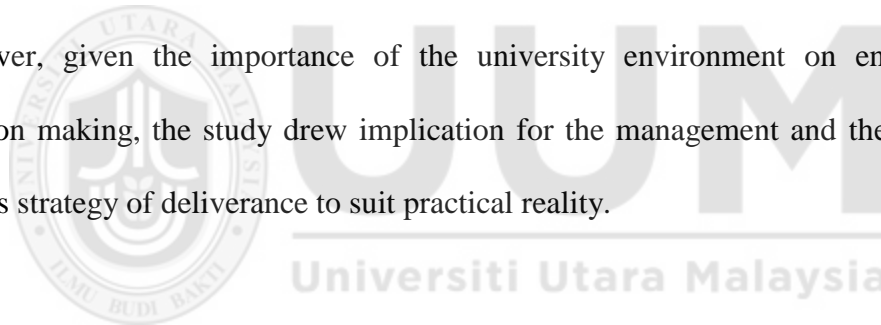
On top of that, Fleming (1994) examined the role of structured interventions in determining graduate entrepreneurship. Data were particularly obtained from Industrial Development Authority (IDA) concerning students who participated in the IDA Annual Student Enterprise Award from 1984-1988, hence setting the basis for assessing the productivity of enterprise development initiatives commencing at the undergraduate level. The study made an effort to explain that education is necessary in stimulating the growth of entrepreneurial initiatives. It was pointed out that higher education is responsible for producing highly qualified graduates that are potential entrepreneurs with innovative ideas.

Furthermore, Johannisson, Halvarsson, and Löfstål (2001) employed a rare methodology in their study with the conviction that universities provide a level playground for breeding entrepreneurs. The method involved using emerging firms as live case study in teaching entrepreneurship. Students were made to assume the roles of consultants and mentors in a project involving 90 undergraduate students and 30 new firms. The outcome was both interesting and impacting, as the students' dealings with the entrepreneurs in their various functions increased their belief to possess the capacity to deliver as entrepreneurs.

Additionally, Alves, Silva, and Pereira (2010) studied the entrepreneurship programme introduced by the Polytechnic Institute of Leiria (IPL) to determine the impact of some of the remarkable initiatives included in the programme, such as workshops, seminars, ideas and business plan competitions, as well as road shows on the possibility of creating entrepreneurial culture in the academic institution. The results indicated an increased number in the creation of supported business projects, incubated spin-offs and virtual incubated projects, as well as technology-based enterprises. In addition, the entrepreneurship education, which also emphasized practical learning to develop skills, has also changed the general perception of both the trainers and the trainees on the entrepreneurship training process.

In addition, Wang, and Verzat (2011) compared engineering students' entrepreneurial intentions and their perception of career orientation in two different engineering schools; one of them (Ecole Centrale de Lille) employed pure engineering curriculum, while the other (ITEEM) utilised dual curriculum, which comprised of engineering and management. The study used both qualitative and quantitative longitudinal analyses to show that while students' entrepreneurial intention and project management careers were enhanced in ITEEM, traditional technical skills was encouraged in Ecole Centrale de Lille. Surprisingly, the study also revealed that entrepreneurial career orientations increased in ITEEM, but decreased in Centrale. Furthermore, perception of school culture differed between the two categories of students; it was weak in Centrale, but strong in ITEEM. Therefore, the study emphasised school culture relevance when considering the development of entrepreneurship behaviour among students.

Meanwhile, in a related study, Zainuddin, Abd Rahim, and Rejab (2012) evaluated the effect of entrepreneurship education curriculum, which strengthened with information communication technology (ICT) on students' entrepreneurial self-efficacy. Besides, social norms were also considered in relation to students' entrepreneurial intention. Regression was performed on the data obtained from the survey of entrepreneurship students from four universities offering entrepreneurship degree course. Moreover, specific entrepreneurship education strengthened with ICT exposure was found to significantly affect students' entrepreneurial self-efficacy, but social norms were not significant at predicting students' entrepreneurial intention. The study, therefore, showed that instructors as role models failed to influence students' entrepreneurial behaviour. However, given the importance of the university environment on entrepreneurship decision making, the study drew implication for the management and the instructors to redress strategy of deliverance to suit practical reality.



Besides, most of the studies reviewed were concerned with how personal and environmental factors i.e. university environment influence intention, but little is known about the interaction between university environment and personality or other factors said to influence the antecedents of entrepreneurial intention. This is especially necessary to determine how university environment could strengthen the relationships between entrepreneurship education, personality traits, and entrepreneurial intention; given that previous studies have shown that personality characteristics had weak or indirect effect on intention (Lüthje & Franke, 2003; Franke & Lüthje, 2004; Schwarz *et al.*, 2009). Furthermore, previous studies have observed that university environment indirectly

influenced entrepreneurial intentions (Maina, 2011; Geissler *et al.*, 2012) by impacting on self-efficacy and perceptions of desirability (Maina, 2011), while the role of university environment in promoting intention by strengthening the effects of factors known to influence intention needs to be established. Thus, this study examined the moderating role of university support on the relationship between perception of effective entrepreneurship education, perception of personal creativity disposition, and entrepreneurial passion.

## 2.10 Summary

The review of the literature has shown that the beginning of entrepreneurship is opportunity identification and emphasised that the process required the intention to display entrepreneurial behaviour (Wang *et al.*, 2011). Entrepreneurial intention is a conscious state of individual's mind that precedes action and encourages thought towards establishing business as a target (Bird, 1989; Shane & Venkataraman, 2000; Fayolle & Liñán, 2014). Entrepreneurial intention can explain the reason for students' involvement in entrepreneurship and the students' decision to establish a business (Ariff *et al.*, 2010). Thus, in order to develop programmes and policies that will promote entrepreneurial behaviour among students, it is important to discover the actual factors responsible for shaping students intention to begin a new venture (Lüthje & Franke, 2003; Bakotić & Kružić, 2010).

Generally, researchers have described the common factors of individual attitude to behaviour, perceived social norms, and individual self-efficacy as influencing entrepreneurial intention (Krueger Jr *et al.*, 2000; Liñán *et al.*, 2005). Consequently, some studies (Franke & Lüthje, 2004; Rodrigues *et al.*, 2008; Teixeira, 2007) had examined some important variables that influenced the intention of graduates in establishing business ventures. According to Lee, and Wong (2004), some cognitive factors like; needs, values, wants, habits, and beliefs are capable of influencing the intention to display entrepreneurial behaviours. Researchers like Baron (2004), as well as Shaver, and Scott (1991) have emphasised the important role of cognitive variables in individual decision making process. Therefore, to make understanding the difficult process of entrepreneurship easier cognitive perspective must also be understood.

Previous studies have also indicated that personal factors as well as environmental factors influenced entrepreneurial intention, factors that were given much concern includes attitudes towards entrepreneurship, personality traits, and social environment (Robinson & Haynes, 1991; Davidsson, 1995; Brandstätter, 1997; Franke & Lüthje, 2004; Segal *et al.*, 2005). Even though studies have linked personality factors to entrepreneurial intention, there are inconsistencies across studies. However, personality is displayed within certain domain of demographical, cultural, economic, social, political and technological factors (Hisrich, 1990). For this reason, previous studies have categorized into two the factors necessary for forming entrepreneurial intention, these factors are the individual domains and the contextual variables (Bird, 1988). Other scholars, in studying the role of contextual dimensions, indicated that environmental influences (Morris &

Lewis, 1995) and support from environment (Lüthje & Franke, 2003) could have an impact on EI.

Consequently, the reason for choosing to become or not to become an entrepreneur is embedded in the ability for creative thinking or the perception for possessing creative ability. Hence, individuals that are creative will most probably engage in entrepreneurship behaviour (Ward, 2004). Moreover, self-assessment of creativity disposition has been supported in several studies (Batey & Furnham, 2008). Therefore, people should be giving the opportunity to judge their capability of generating new and valuable ideas that are necessary for entrepreneurs' success (Darini *et al.*, 2011). Thus, considering that the relationship between creativity disposition and entrepreneurial intention has hardly been measured in intention-based models, this study examined the influence of individual students' creativity disposition on entrepreneurial intentions (Hamidi *et al.*, 2008).

It is also believed that important factors of personality and good supporting environment could influence a person's creative ability (Fritsch & Sorgner, 2013; Papaleontiou-Louca *et al.*, 2014), and so, training becomes a focal point for creative ability enhancement (Cropley & Cropley, 2000; Papaleontiou-Louca *et al.*, 2014), which this study considered the university to deliver in this direction. Again, the contradiction between findings on the relationship between creativity and entrepreneurship (Hamidi *et al.*, 2008; Batchelor & Burch, 2012; Luca *et al.*, 2012) is a clear indication that more studies in this line are required to confirm previous findings.



The definition of entrepreneurship education suggest effectiveness of the programme as an important element which will result to providing individuals with practical knowledge of business, build self-confidence and develop skills that will be useful to achieve business success (Wilson *et al.*, 2007). However, establishing a successful and effective entrepreneurship education programme (Charney, Libecap, & Center, 2000) is quite expensiveness, hence, the need for intervention by faculties and universities in order to provide the needed support to enhance the achievement of the goal of initiating and encouraging business creation among young graduates. This poses a challenge to the developing world to encourage the development of graduate entrepreneurs and to contribute to the growth of entrepreneurship by providing suitable and supportive environments (Nabi & Liñán, 2011). University thus becomes a reference point to initiate and develop the entrepreneurship programme.

Furthermore, the inconsistency between results of previous studies (Souitaris *et al.*, 2007b; Dohse & Walter, 2010; Byabashaija & Katono, 2011; Lange *et al.*, 2011; Hsiao *et al.*, 2012; Lekoko *et al.*, 2012) calls for more research in the area pertaining to the relationship between entrepreneurship education and entrepreneurial intentions of students to confirm the previous findings, as there is need to establish how valuable and effective entrepreneurship education is to the society (Peterman & Kennedy, 2003; Albornoz & Rocco, 2009;). In addition, for the developing countries, specifically African developing economies, there is scarcity of researches on the relationship between entrepreneurship education and entrepreneurial intentions (Nabi & Liñán, 2011). Consequently, the recommendation on the need for future studies to investigate the

relationship between effective entrepreneurship education and entrepreneurial intention (Gaddam, 2008; Solesvik *et al.*, 2012) is amplified. Hence, the current study is sought to examine the relationship between perceived effective entrepreneurship education and perceived creativity disposition, entrepreneurial passion (inventing and founding), and the overall entrepreneurial intention among university students, as evaluating entrepreneurship from the students' point of view may provide a valid assessment.

Passion is also a necessary factor in entrepreneurship (Bird, 1988; Cardon *et al.*, 2013) which has the components of affective, cognitive, and behavioural elements (Chen *et al.*, 2009), and impact on individual behaviour (Cardon, Wincent, *et al.*, 2009; Murnieks *et al.*, 2011). Therefore, it is important to build passion on establishing a venture as it is essential if the business must succeed. Moreover, most studies on passion (Baum & Locke, 2004; Chen *et al.*, 2009) were more concern with the relationship between individual entrepreneurial passion and organisational outcomes (Murnieks *et al.*, 2011) or otherwise, hardly are emphasis given to the relationship between entrepreneurial passion and entrepreneurial intentions. However, studies have considered its indirectly relationship by observing the influence of passion as a moderator to other antecedent factors to intention (De Clercq *et al.*, 2011) or as antecedent to other variables that impact on intention (Vallerand *et al.*, 2007; Murnieks *et al.*, 2011).

Consequently, this study examines the relationship between entrepreneurial passion (passion for inventing and passion for founding) and entrepreneurial intentions. Moreover, this study adopted the instrument developed by Cordon *et al.*, (2013) to

capture the exact measures of experience of passion with all its dimensions in all domains, except that of developing. This is because; in the process of nurturing entrepreneurial passion, what seemed to matter most and more immediate had been the passion for inventing new products and founding new organisation. Cordon *et al.*, (2013), nevertheless, only stopped at the levels of developing and validating the instrument to capture entrepreneurial passion and its dimensions, which had been instrumental to this study and other future studies, but did not extend to see the impact of entrepreneurial passion on other possible outcomes.

Furthermore, some of the studies reviewed were concerned with the influence of personal and environmental factors i.e. university environment on intention, yet studies are rare on the interaction of university environment or support with personality factors or other factors seen to impact on entrepreneurial intention (Schwarz *et al.*, 2009). This is especially necessary to determine how university environment could strengthen the relationships between entrepreneurship education and personal factors as well as entrepreneurial intention (Welter & Smallbone, 2012; Fayolle & Liñán, 2014). Besides, previous studies have observed that university environment indirectly influenced entrepreneurial intentions (Maina, 2011; Geissler *et al.*, 2012) by impacting on self-efficacy and perceptions of desirability (Maina, 2011), whereas the role of university environment in promoting intention by strengthening the effects of factors known to influence intention needs to be established. Thus, examining how university can enhance the effect of entrepreneurship through complementary activities, e.g. promoting internship, encouraging creativity and giving inspirational talks to build students'

emotion, and hence, boosting their passion for entrepreneurship (Dohse & Walter, 2010), is necessary. Hence, this study examined the relationship between perceived effective entrepreneurship education and entrepreneurial intention, while considering the moderating role of university support as well as the mediating roles of perceived creativity disposition and entrepreneurial passion.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter explains the procedures undertaken in conducting this research. Hence, this chapter covers the underpinning theory of the study, the theoretical framework and the development of the hypotheses for the study. It also discusses the research design, the instrumentation and the measurement of variables, the population of the study, the sample size determination, the sampling technique, the pilot study, the data collection procedures, and the data analysis technique.

#### **3.2 Underpinning Theory**

The underpinning theory that explains the relationships between the independent variables of perceived effective entrepreneurship education on the dependent variable of entrepreneurial intention and the roles of perceived creativity disposition, entrepreneurial passion, and the perception of university support is covered by the Theory of Planned Behaviour (TPB) developed by Ajzen (1991) and supported with the Shapero's Entrepreneurial Event (SEE) model developed by Shapero and Sokol (1982). These two cognitive-based theories are mostly regarded as the main theories generally adopted in entrepreneurial intention researches to explain new venture formation.

TPB is an intention-based model that explains an individual's intention to perform a particular behaviour. As a good predictor of planned behaviour (Fishbein & Ajzen, 1975; Bagozzi *et al.*, 1989; Krueger & Carsrud, 1993), intention itself shows how hard people are willing to try or the effort exerted in order to perform a given behaviour (Ajzen, 1991), for example, entrepreneurial behaviour (Liñán, 2004). Hence, the extent of the intention can determine the likelihood of the actual performance. The TPB has been an influential model (Krueger Jr *et al.*, 2000; Autio, Keeley, Klofsten, Parker, & Hay, 2001; Kolvereid & Åmo, 2007; Van Gelderen *et al.*, 2008; Engle *et al.*, 2010; Moriano, Gorgievski, Laguna, Stephan, & Zarafshani, 2011) in offering a sound and mostly applicable theoretical framework in improving the understanding and prediction of entrepreneurial intention, while also considering personal and social factors, including support (Krueger Jr *et al.*, 2000). The meta-analyses of Kim and Hunter (1993) showed that while attitudes predicted intentions with 50% variance, intentions had been a predictor of behaviours with 30% of variance explained.

The theory of planned behaviour was employed in this study because it has been proven to be adequate in explaining how intention can lead to performing a given behaviour (Ajzen & Driver, 1992; Krueger Jr *et al.*, 2000; Segal *et al.*, 2005) in different fields of studies and situations. In entrepreneurial research, TPB has been employed and used as a framework to explain and understand entrepreneurial behaviour (Van Gelderen *et al.*, 2008; Liñán & Chen, 2009; Miller, Bell, Palmer, & Gonzalez, 2009; Schwarz *et al.*, 2009; Turker & Selcuk, 2009; Shook & Bratianu, 2010; Moriano *et al.*, 2011). The model

has also been employed to study the intention to create a venture (Krueger & Carsrud, 1993; Kolvereid, 1996; Krueger Jr *et al.*, 2000; Fayolle & Gailly, 2004). Moreover, the theory of planned behaviour has been widely applied to study student population in entrepreneurship researches (Krueger & Carsrud, 1993; Krueger Jr *et al.*, 2000). Empirically, various studies have found TPB useful in explaining students' EI (Krueger Jr *et al.*, 2000; Li, 2007; Van Gelderen *et al.*, 2008; Wu & Wu, 2008). Hence, applying TPB to study students' entrepreneurial intentions had been considered as viable.

Ajzen's (1991) theory of planned behaviour has three theoretical independent determinants of intention towards a behaviour; attitudes towards the behaviour, subjective norms, and perceived behaviour control. Accordingly, adopting this model in entrepreneurial intentions showed that individuals make their decision to create ventures decision based on three elements (Liñán, 2004); personal attitude or attraction (PA) towards entrepreneurship, the perceived social norms regarding the career option, and the individual perceived behavioural control or entrepreneurial self-efficacy. PA refers to the extent to which an individual has positive or negative valuation of becoming an entrepreneur (Kolvereid, 1996; Ajzen, 2002). The higher an individual's positive perception of the outcome of commencing a business, the more favourable attitude towards the behaviour is expected and the stronger the individual intention is to establish a business.

Meanwhile, subjective norm refers to the perceived social pressure to execute or not to execute a particular behaviour. It is based on the consideration that certain important

people to the decision maker will support or fail to support entrepreneurial action of establishing a business (Ajzen, 2001). It is also concerned with the extent to which the approval or disapproval affects the individual. The more the support or approval from this referent groups to an individual, the higher the individual's intention is to establish a venture. On the other hand, perceived behavioural control refers to the perceived ease or difficulty of performing entrepreneurial behaviour. It concerns the beliefs of capability and perception of controllability of performing entrepreneurial behaviour (Liñán & Chen, 2009). Thus, the higher the perceived behavioural control, the greater the individual's intention is to start a business.

Other than that, Shapero's entrepreneurial event model (SEE) has been regarded as an entrepreneurial intentions-based model that has three common elements; the perception of desirability, the propensity to act, and the perception of feasibility (Shapero & Sokol, 1982) that could also be prompted by a displacement event (Kuehn & Smith, 2008). Empirical application of the SEE has also proven that entrepreneurial intention can be accounted for by individuals driven by the perception of feasibility and desirability of entrepreneurial activity (Krueger & Brazeal, 1994; Krueger Jr *et al.*, 2000; Fitzsimmons & Douglas, 2011). Perceived desirability shows the extent to which a person feels an attraction towards becoming an entrepreneur. The propensity to act as volitional aspects of intentions (Shapero & Sokol, 1982) shows that the intention to create a venture will not take place unless predisposition to act according to a decision is found in the individual.



Even though Shapero and Sokol (1982) view that there is more than one factor that is accountable for a new venture creation process, the perceived credibility, perceived desirability, and propensity to act have been said to explain well over half of the variance of the intentions towards entrepreneurship, while perceived feasibility among them explained the highest (Krueger & Carsrud, 1993). Hence, the call for more researches to consider the factors that can highly contribute to the perceptions of feasibility (Krueger & Brazeal, 1994).

With that, Krueger and Brazeal (1994) found a major overlap when they compared the theory of planned behaviour and Shapero's model, which showed that the two theories are highly compatible (Krueger Jr *et al.*, 2000). The feasibility of Shapero and Sokol (1982) is similar to Ajzen's (1991) perceived behavioural control, while the desirability concept includes both the attitude towards entrepreneurship and the subjective norm elements (Krueger & Brazeal, 1994; Kolvereid, 1996). Subsequently, the perceived behavioural control and perceived feasibility are also similar to self-efficacy (Ajzen, 1991; Krueger & Carsrud, 1993; Summers, 1997; Liñán-Alcalde & Rodríguez-Cohard, 2004) developed by Bandura in 1986, which is related to the perception of one's ability to perform a given activity.

In all the three concepts, the realisation of the sense of capability of entrepreneurial behaviour is the real concern. In other words, entrepreneurs will be motivated if they firmly believe that their aims are achievable (Sanchez & Heene, 2005). Another concept that is closely related to the behavioural control is perceived entrepreneurial skills. When

an individual has a good perception of his skill in undertaking an entrepreneurial activity, he is motivated in building entrepreneurial intention. However, the concern is not with the possession of the skills, but with the good assessment of how to utilize the skills (Bandura, 1986). The integration of the two models in explaining entrepreneurial intentions of students have been valid and supported in earlier studies (Autio *et al.*, 1997; Henry *et al.*, 2003; Liñán, 2004). Thus, using these intention models to explain entrepreneurial intention of students in the current study is valid.

Attitude is seen in this study as the perceived usefulness, which signified the degree of a student perception of the usefulness of entrepreneurship education in driving positive perception of creativity dispositions as well as building the passion necessary to create entrepreneurial intention. In addition the desirability and perceived attractiveness is akin to both affective feelings, which includes passion, likeness and pleasant feelings towards the entrepreneurial activity as well as the favourable evaluation of the outcome in terms of establishing a venture and been recognized as an entrepreneur (Krueger *et al.*, 2000; Liñán and Chen, 2009). It could also be an entrepreneurial attitude developed as a result of direct or indirect personal experience, which could be obtained by having been exposed to entrepreneurship education and role model influence. The perceived feasibility is the self-efficacy or the belief that one has the capabilities to perform certain tasks i.e. establish a business venture (Krueger *et al.*, 2000). The capability belief can also be developed as a result of the entrepreneurship knowledge obtained and skills developed. According to Reitan (1997), the perceived feasibility is concerned about the ease or difficulty of initiating a business venture in relation to the opportunities available,

knowledge acquired, resource availability and accurate self-assessment of individual's skills to create a venture. Hence, perceived feasibility is defined in this study as student's perceived creativity disposition to become a successful entrepreneurs, which is developed from the perception of the effectiveness of the entrepreneurship education offered.

Additionally, TPB supposes that background factors can have a direct influence on behavioural intentions, in addition to their indirect influence through TPB antecedents (Fishbein & Ajzen, 2010). It is also emphasised that when an action is done repeatedly, it becomes habitual, and hence, builds the confidence that affects intentions directly (Trafimow & Borrie, 1999; Fishbein & Ajzen, 2010). The effect of such repeated behaviour on behavioural intentions is especially stronger in conditions of unstable contexts and uncertain behavioural outcomes (Trafimow & Borrie, 1999; Ajzen, 2002). This can be appreciable in the light of establishing a business venture as a result of obtaining continuous effective entrepreneurship education and constant display of creativity.

The Shapero's entrepreneurial event theory also sees firm creation as an outcome of the interaction among contextual factors that influence an individual's perceptions. According to Peterman, and Kennedy (2003), taking an entrepreneurial option would be a result of some external occurrences, termed as a sudden occurrence and that individual response to the external event will be guided by their perceptions on the available options. This means that external circumstances would determine individual's perception of desirability and feasibility of starting a business. Accordingly, Shapero and Sokol

(1982) developed three stages in the venture creation process. The first is explained by displacements, which could positively or negatively predispose an individual to pursue entrepreneurship. The second stage is the push to be an entrepreneur due to the presence of some circumstances (i.e. training, environment, and family). In the last stage, the prospective entrepreneur will decide to establish a business when certain conditions are attained, for example, access to finance, supporting activities, human resources, etc.

Given the above theoretical supports, this study applied TPB and SEE to examine how the relationships between individuals' perceptions of effective entrepreneurship education, perceived creativity disposition, and entrepreneurial passion on one hand, as well as their formation of entrepreneurial intentions, on the other hand, would depend on environmental support (University support), which have received little attention in previous studies. This study contended that the extent to which individual students perceived the university to be supportive in terms of providing enabling environment had significant importance for how their perceptions about effective entrepreneurship education influenced their creativity disposition and entrepreneurial passion, which then translate into entrepreneurial intention. Hence, it is argued that the extent to which individuals perceived an entrepreneurial career as highly desirable or feasible (given their perception about effective entrepreneurship education), their perception of university support, creativity disposition, and entrepreneurial passion, would facilitate the translation of this consideration into real entrepreneurial intentions. Consequently, the proposed theoretical framework is presented in Figure 3.1.

### 3.3 Theoretical Framework

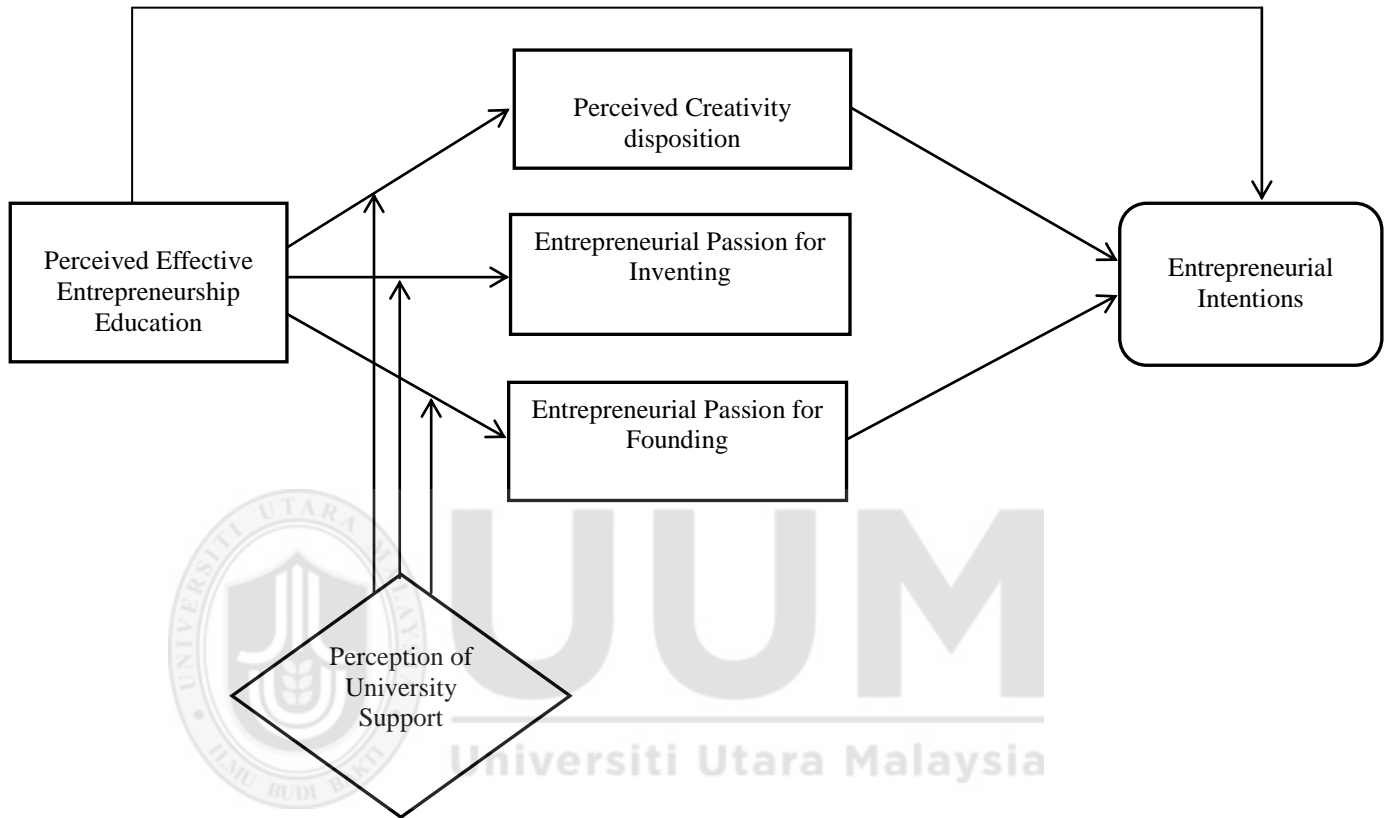


Figure 3.1  
*Theoretical framework*

### 3.4 Development of Hypotheses

Given the literature review on the variables of concern and the theoretical justifications highlighted above, in addition to the following syntheses of the literature, the hypotheses of this study were formulated to be tested empirically, and hence, validated. In relation to the six constructs in the model, including one independent variable, one moderating variable, three mediating variables, and one dependent variable, thirteen hypotheses had been formulated; seven direct relationships, three moderating relationships, and three mediating relationships. Table 3.1 summarizes the hypotheses of the study.

Table 3.1  
*Summary of Hypotheses*

<b>Hypotheses</b>	<b>Statement</b>
<i>H1</i>	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial intention.</i>
<i>H2</i>	<i>Perceived effective entrepreneurship education is positively related to perceived creativity disposition.</i>
<i>H3</i>	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial passion for inventing.</i>
<i>H4</i>	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial passion for founding.</i>
<i>H5</i>	<i>Perceived creativity disposition is positively related to entrepreneurial intention.</i>
<i>H6</i>	<i>Entrepreneurial passion for inventing is positively related to entrepreneurial intention.</i>
<i>H7</i>	<i>Entrepreneurial passion for founding is positively related to entrepreneurial intention.</i>
<i>H8</i>	<i>Perceived creativity disposition mediates the relationship between</i>

Table 3.1  
*Summary of Hypotheses*

<b>Hypotheses</b>	<b>Statement</b>
	<i>perceived effective entrepreneurship education and entrepreneurial intention.</i>
H9	<i>Entrepreneurial passion for inventing mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.</i>
H10	<i>Entrepreneurial passion for founding mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.</i>
H11	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and perceived creativity disposition, such that the relationship is stronger for higher perception of university support.</i>
H12	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for inventing, such that the relationship is stronger for higher perception of university support.</i>
H13	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for founding, such that the relationship is stronger for higher perception of university support.</i>

### **3.4.1 Entrepreneurship Education and Entrepreneurial Intentions**

Entrepreneurship education has been defined by Jones and English (2004) as a way of developing individuals' ability to recognise business opportunities and cash on them, besides developing self-esteem, knowledge, and skills in commencing a business venture in the event of risk. Their definition, however, emphasizes on the kind of knowledge that is action-based, encourages practical learning, problem-solving type, project-based, creative, and allows peer evaluation. They further argued that such learning process offers enterprising skill behaviour that is required to create and manage ventures. Politis

(2005) also developed a framework that recognized three important mechanisms in the process of entrepreneurial learning; transformation process, entrepreneurs' career experience, and entrepreneurial knowledge, which has been said to be effective in recognizing entrepreneurial opportunities.

The main issue in the various definitions of entrepreneurship education is concerned about effectiveness. Similarly, this study conceptualized effective entrepreneurship education as that which exposes individuals to practical business knowledge, build self-confidence and develop skills in order to succeed in running business venture (Wilson *et al.*, 2007). Hence, perceived effective entrepreneurship education is the perception on the effectiveness of the knowledge acquired about entrepreneurship (Souitaris *et al.*, 2007b). According to Liñán, Rodríguez-Cohard, and Rueda-Cantuche (2011), entrepreneurial training should consider, in addition to increasing perceived feasibility and desirability, the development of the business venture after the initial establishment. Their study suggested that these can be achieved through raising general awareness, encouraging creativity and opportunity recognition, as well as acquiring knowledge of the business environment.

For example, Souitaris, Zerbinati, and Al-Laham, (2007b) showed that the entrepreneurship programmes increased attitudes and the overall entrepreneurial intention and that inspiration is the most dominant benefit derived from the programme. The findings also threw in light to the practice of teaching entrepreneurship and suggested that for effective results; such programmes should offer courses with relevant modules,



encourage the design of effective business plan that can stand the test of time with reasonable business idea, as well as provide inspirational talks on business success and networking.

Meanwhile, Dohse and Walter (2010) examined the extent of entrepreneurship education within the university departments that influenced students' entrepreneurial intentions. They proposed that the effect of such education could depend on; the mode of delivery, the regional context, and the influence of role models or work experience. Their results revealed that intentions and attitudes were directly affected by the active modes of entrepreneurship education, while the influence of the reflective modes depended on the environmental area. Hence, the study provided implication for delivering entrepreneurship education.

In addition, Nabi and Linan (2011) identified and clarified issues pertaining to graduates in the developing world. They conclusively emphasised on entrepreneurship education in particular as a key instrument to help promote entrepreneurial activity. In a related study, Lange, Marram, Jawahar, Yong, and Bygrave (2011) indicated that writing of business plan also highly influenced students' intentions and eventual behaviour. In general, Lekoko, Rankhumise, and Ras (2012) showed that effective entrepreneurship education is important in driving students' entrepreneurial intention.

Furthermore, Gerba (2012) asserted that students who had been taught entrepreneurship education had better entrepreneurial intention over students who had not taken entrepreneurship course. In the same context, Muofhe and Du Toit (2011) indicated that entrepreneurship students were more disposed to entrepreneurial intentions than non-entrepreneurship students; they also found a direct relationship between entrepreneurship education and entrepreneurial intentions. Likewise, results obtained in a study carried out by Kolvereid and Moen (1997) indicated that graduates who enrolled the entrepreneurship course as major were more likely to start new businesses and had stronger entrepreneurial intentions than the others.

Moreover, the study of Peterman & Kennedy, (2003) provided empirical evidence to support exposure to entrepreneurship education as an additional contributing variable in entrepreneurial intentions models. Other studies revealed considerable changes in attitudes in response to entrepreneurship education (Byabashaija & Katono, 2011). These findings presented lessons for policy makers and raised more questions for researchers, probably on how effective such courses in entrepreneurship education can be and what are the mechanisms that can boost this effectiveness.

Apart from that, Zainuddin and Rejab (2010) believed that specialized entrepreneurship education contributed to increasing entrepreneurial self-efficacy, and subsequently, towards their self-employment intention, and therefore, increased their employability value. This study, therefore, highlighted that introducing specific entrepreneurship education targeted and suitable to a particular group could yield desired results. Other

studies that aimed at evaluating entrepreneurship education programmes simply pointed out to the increasing interest among researchers and policy makers to determine the effectiveness of such programmes with the basic aim of employing best practices in delivering entrepreneurship education.

In the developing countries, for example, rarely researches are available that relates entrepreneurship education and entrepreneurial intentions (Nabi & Liñán, 2011). Effective entrepreneurship education has seemed to be the major concern among stakeholders, especially policy makers, university authorities, and trainers; hence, the continuous evaluation of the programme by various researchers, including the government to help in improving its development and implementation. Consequently, the recommendation on the need for future studies to examine the relationship between effective entrepreneurship education and entrepreneurial intention (Gaddam, 2008; Solesvik *et al.*, 2012) must be looked into. Therefore, this study proposed the following hypothesis to determine the relationship between perceived effective entrepreneurship education and entrepreneurial intention of university students.

*H1: Perceived effective entrepreneurship education is positively related to entrepreneurial intention.*

### 3.4.2 Entrepreneurship Education and Creativity

Creativity is defined as creating something that is novel and useful (Amabile, 1996; 1988). It has also been regarded and conceptually accepted in this study as the combination and the rearrangement of knowledge in the minds of people allows flexible thinking in the creation of novel ideas that are unexpected, but rather useful (Chen *et al.*, 2013). On the other hand, Godfrey (1996) considered that creativity is necessary for continuously reinventing businesses and suggests unleashing imagination of people through playfulness and fun. He also considered innovation as necessary to turn ideas into goods and services that are useful and beneficial to the market. Creativity, thus, is the basis of innovation (Dewett & Gruys, 2007; Almog-Bareket, 2011) and key to organisational growth. Therefore, creativity and innovation are identified as key factors for the long-term success of business (Florida, 2002; Kerr & Lloyd, 2008).

Moreover, it has been understood from history that educational process design has certain implications for the capabilities of individuals engaged in innovative activities (Baumol, 2004). Baumol (2004) went further to explain that education, on one hand, provided to future entrepreneurs analytical tools necessary for engaging in innovative related activities, and on the other hand, encouraged creativity and imagination in a simplified manner. Hence, it is generally agreed that creativity is a skill that can be learned (Runco, 2004) and taught through support activities, encouragement, and support to individuals (Williamson, 2001). Literature has also shown that creativity and innovation capacity can only be enhanced through continually generating knowledge and its applications (Williamson, 2001), hence, the strong dependency between the creation of knowledge

and creativity (Chen *et al.*, 2011). Studies in the past have also long indicated that education should emphasize the development of creativity, believing creativity can be so influenced, and hence, so many kinds of training programmes have been suggested to develop creative thought processes (Craft, 2001). In addition, creativity training programmes available in schools are said to be more effective with high involvement of teachers (Benjamin, 1984).

Furthermore, Tepper and Kuh (2011) believed that creativity can be nurtured by training and developing specific skill over time. Hence, effective enterprise/entrepreneurship education must develop enterprising skills (Pittaway *et al.*, 2009b) and the key enterprising skill is creative thinking (Gibb, 1993; Gibb, 2002a). That is why creativity development among students in business schools has become a matter of priority (Ghosh, 2014).

In his description of creativity in higher education, Jackson (2008) emphasised that such type of education should develop fully the creative ability among students. He further explained that process-based learning strategies are effective in prompting students' creativity. Moreover, a process-rich curriculum ensures more facilitated and collaborative models of teaching and learning that nurture and enhances students' creativity (Jackson, 2008). Also, Charyton and Merrill (2009) suggested that creativity skills in fostering innovation should be included in schools curriculum to enable students to practice and develop these skills. Moreover, studies have shown that certain educational approaches taken could foster creativity more than others. For example, the

Montessori education, as reported by Dantus (1999), is indeed effective in developing life-long creative skills. He believes that self-expression, as encouraged in Montessori education, is important in improving human authenticity and spirit.

There is, therefore, a shift from traditionally based teaching of entrepreneurship education to individuals, to a more action-oriented kind of teaching, which emphasizes on learning by doing (Rasmussen & Sørheim, 2006). Meanwhile, other studies have claimed that entrepreneurship education should also give much attention to individuals instead of concentrating on only the technical aspects of entrepreneurship (Heinonen & Poikkijoki, 2006). The study carried out by Zampetakis *et al.*, (2007) indicated that proactivity and creativity development programmes are useful in increasing students' entrepreneurial desirability. Hence, the support for exposing students to entrepreneurship education as an additional mechanism for increasing the desirability and the feasibility of business creation is valid (Peterman, & Kennedy, 2003).

In another study, Matlay *et al.*, (2011) asserted the importance of entrepreneurship education in influencing students' search for business opportunities, which then explains the effect of creativity on the viability of the business idea. DeTienne and Chandler (2004) argued for opportunity identification as a skill that can be developed in the entrepreneurship classroom. The study also indicated that the process is capable of improving the number of ideas generated (creativity) and the innovativeness of those ideas. In the same study, DeTienne and Chandler (2004) showed that creativity-enhancing training was found to significantly improve university students' ability to think

creatively. In addition, Feng (2013) emphasised that education in creativity increased students' creative ability, as well as enhanced their problem-solving ability and their discipline aptitude.

Therefore, it has been acknowledged from theory that certain targeted education seemed to play a significant role in developing the level of self-efficacy in individuals. For example, self confidence in people's ability to perform certain task successfully has been linked to mastery experiences, modelling, social persuasion, and judgments of one's own physiological states (Bandura, 1992). Thus, entrepreneurship education is said to play a significant role in developing individual's self-efficacy by providing opportunities to conduct feasibility studies, developing business plans, and participating in running simulated or real business. Furthermore, entrepreneurship educational programmes that involve the use of guest speakers and case studies in their teaching methods can build self-efficacy by using role models (Wilson *et al.*, 2007). Consequent to past literatures' emphases that entrepreneurship education is vital in increasing creativity development in people, especially the effectiveness of the programme, this study proposed the following hypothesis:

*H2: Perceived effective entrepreneurship education is positively related to perceived creativity disposition.*

### 3.4.3 Entrepreneurship Education and Entrepreneurial Passion

Understanding the role of behavioural and cognitive factors in new venture creation process is of crucial importance, as entrepreneurs play a fundamental role in new venture creation. Corbett (2005), however, suggested that to fully comprehend the nature of the entrepreneurial process, the question of how individuals learn and modes of learning that influence opportunity identification and exploitation, should be understood. Their contribution is in the connection between knowledge, cognition, and creativity to show how appreciating differences in individual learning will strengthen entrepreneurship research. The study also highlighted the fact that learning perspective on entrepreneurship does not only push students to focus on discovering new opportunities, but also the passion for searching opportunities that best fit their identity as future entrepreneurs.

Studies in the past have also established that a relationship existed between passion and learning activity engagement (Bonneville-Roussy *et al.*, 2013). The activity engagement is described as involvement in a specifically designed educational activity that actually encourages persistence in higher education (Kuh *et al.*, 2008). For entrepreneurial activity engagement, however, the entrepreneurial learning outcome for individual student is believed to be tangible, as well as emotional, because it produces the feeling and the experience of getting closer to entrepreneurial activities, experiences, and emotions (Pittaway *et al.*, 2009a).



It has also been understood from literature that psychological characteristics affect individuals' entrepreneurial intention, while experiential learning techniques can be instrumental in changing emotional competences (Padilla-Meléndez *et al.*, 2014). Learning and emotion move together as emotion is an essential factor in learning (Brown, 2000; Kyro, 2008). Hence, entrepreneurship education should communicate entrepreneurship as an emotionally intense process where there is a mix of excitement with anxiety and fear, with common experiences of high commitment, uncertainty, and lack of control (Lackéus & Williams Middleton, 2011). However, in order to understand emotion, David Rae (2005) used the terms “passion”, “buzz”, “excitement”, and “fun” to describe emotion, as well as the energy that goes into establishing and running an enterprise.

Scholars have also agreed that emotion-based perspectives are essential in considering new approaches to research and teaching entrepreneurship (Gibb, 2002b). In this regard, Souitaris *et al.*, (2007b) indicated that emotional element of inspiration was found to be the most influenced benefit of the entrepreneurship programme. Meanwhile, Bonneville-Roussy *et al.*, (2013) showed support for the hypotheses that teaching entrepreneurship education in autonomy supportive way could increase harmonious passion and persistence in the quest to create a business venture as a career in the student's life. Moreover, the findings revealed that autonomy support from instructors would facilitate long-term engagement and persistence. Hence, entrepreneurship education had been suggested to be capable of developing passion among students to pursue entrepreneurial career (Halvari *et al.*, 2009).

In another line of support, Dey and Steyaert (2007) argued against the concept of knowledge that overlooks the connection between knowing and passion. Other than that, Lackéus and Williams Middleton (2011) asserted that action-based approach to learning assumes emotion as critical in the venture creation process. Furthermore, Padilla-Meléndez *et al.*, (2014) demonstrated that experiential learning techniques are useful strategies in influencing emotional competence and in extension of entrepreneurial passion. Hence, in the context of entrepreneurship education, it can be concluded that the perception of effectiveness in entrepreneurship education is capable of developing entrepreneurial passion in individuals, which will invariably lead to performing the actual entrepreneurial activity (venture creation). This study, therefore, hypothesized the following:

*H3: Perceived effective entrepreneurship education is positively related to entrepreneurial passion for inventing.*

*H4: Perceived effective entrepreneurship education is positively related to entrepreneurial passion for founding.*

#### **3.4.4 Creativity and Entrepreneurial Intention**

Closely related to innovation, a concept in entrepreneurship is creativity, which has been considered in various works because of its role in driving economy of nations (Litchfield, 2008; Wu *et al.*, 2008; Fritsch & Sorgner, 2013). Moreover, Shackle in 1970 introduced creativity and imagination in his work and linked it to the entrepreneurship process, while arguing that in an uncertain situation, every entrepreneur applies his imagination to

decide on the best possible action. This point emphasises the importance of creativity and imagination as required skills in business decision-making process and their roles in avoiding unfavourable consequences (Lourenço & Jayawarna, 2011).

The reason why people may choose to become or not to become an entrepreneur is based on their ability for creative thinking or the perception that they have creative ability, which involves recognizing the opportunities for creating new product or services or new ways of doing things that is worthwhile profitable, and hence, the requirement for being successful entrepreneurs (Schumpeter, 1934; Bird, 1989; Baron, 2004). Entrepreneurship, therefore, has been described as a good playing ground for creative individuals to be successful (Batchelor & Burch, 2012), because creativity involves novelty and usefulness, which are important to entrepreneurship (Amabile, 1996; Ward, 2004). Hence, creative individuals will be more willing to participate in entrepreneurship behaviour (Ward, 2004).

As shown earlier, creativity has been defined in different ways, and this heterogeneity approach in the study of creativity presumes the reason why it has no generally accepted definition. However, most scholars agree with the definition of it been the development of idea that is both novel and useful (Amabile, 1996). However, creativity could be considered as a dormant trait that lays creative behaviour (Eysenck, 1995), thus, indicating that the exhibition of high creative performance is a result of creative personality trait in individuals (Oldham & Cummings, 1996). Moreover, self-assessment of creativity disposition is supported in several studies, for example, Batey, and Furnham

(2008) argued that individuals understand themselves better when it comes to their own creative ability. Hence, opportunity should be giving to people to judge their capability of generating new and valuable ideas that is necessary for entrepreneurs' success (Darini *et al.*, 2011).

On the other hand, Hamidi, Wennberg, and Berglund (2008) employed social cognitive theory to clearly indicate the need for considering creativity in entrepreneurial intention-based models. The researchers believe strongly that creativity disposition will build enormous amount of confidence that is very likely to yield expected results of becoming self-employed. In a related study, Zampetakis, Gotsi, Andriopoulos, and Moustakis (2011) showed that the more creative the students thought they were, the higher their entrepreneurial intentions were. Furthermore, Fatoki (2010) identified, in a study of entrepreneurial intention among South African final year graduating students, that creativity was a motivator of entrepreneurial intention. Therefore, this study examined the relationship between individual students' creativity disposition and entrepreneurial intentions, which has been neglected in intention-based models (Hamidi *et al.*, 2008). Hence, the following hypothesis was proposed.

*H5: Perceived creativity disposition is positively related to entrepreneurial intention.*

### 3.4.5 Entrepreneurial Passion and Entrepreneurial Intentions

Passion or “love” for something (Shane *et al.*, 2003; Baum & Locke, 2004), which has the connotation of affective feelings, particularly intense positive feelings (Cardon, Wincent, *et al.*, 2009), has been defined in various ways by scholars, for example, Vallerand *et al.*, (2003) defined passion as a strong inclination towards an activity that people like, which they find important, and in which they invest time and energy tirelessly. The motivational construct has also affective, cognitive, and behavioural components (Chen *et al.*, 2009), as depicted in the definition termed by Vallerand *et al.*, (2003) and the definition by Perttula (2003), who defined passion as a psychological state involving strong and positive emotional arousal, internal force, and full commitment with meaningful work activities that is personal. Nonetheless, other definition emphasises on positive affect, for example, Smilor (1997) defined passion as the keen interest and pleasure that is realized from the untiring pursuit of a cherishable, challenging, and enriching purpose. These points, to the affective experience, come with performing an activity that has value (Chen *et al.*, 2009). Passion, therefore, influences people’s behaviour (Donahue, 2008; Cardon, Sudek, *et al.*, 2009; Murnieks *et al.*, 2011).

In addition, scholars of entrepreneurship have defined and given meaning to entrepreneurship in a similar direction, for example, Baum and Locke (2004) asserted that entrepreneurial passion drives people’s desire to engage in entrepreneurship related activities. Meanwhile, Cardon’s *et al.*, (2009) definition of entrepreneurial passion and the one adopted for this study expressed entrepreneurial passion as “consciously

accessible, as well as intense positive feelings related to the entrepreneurial activities that are meaningful and salient to the self-identity of the entrepreneur”. Moreover, while building on social psychological and entrepreneurship literatures, Chen, Yao, and Kotha (2009) defined entrepreneurial passion as the extreme emotional condition of an entrepreneur manifested through cognitive and behavioural action that is personally valuable. Recently also, Murnieks *et al.*, (2011) defined entrepreneurial passion as a strong inclination towards enjoyable and important meaningful activities related to being an entrepreneur.

Passion is, thus, an essential factor in entrepreneurship (Bird, 1988; Cardon, Wincent, *et al.*, 2009; Cardon *et al.*, 2013), drives creativity, and encourages persistence especially in difficult times among entrepreneurs (Cardon *et al.*, 2005; Murnieks & Mosakowski, 2006). Thus, passion is the clearly observable happening of entrepreneurial process (Smilor, 1997), the absence of which causes entrepreneurial disconnection, and thereby, leading to the collapse of venture (Cardon *et al.*, 2005). Consequently, it is logical that passion is build prior to setting up of venture given its important role in entrepreneurship success.

Another quite interesting aspect of the recent definition of passion, as presented by Cardon *et al.*, (2009), is the “consciously accessible intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur”. While the intense positive feelings are directed towards activities that are of importance to individuals, and hence, more

enduring (Wincent *et al.*, 2008), as the self-identity is concerning the realisation of the central role that the activity plays in one's identity (Cardon *et al.*, 2013). This shows that identity centrality will differ among individuals, leading to entrepreneurs engaging in selected activities they identify more personally with, and disengaging from the activities with which they do not (Cardon *et al.*, 2013). However, both intense positive feelings and the activity central to self-identity are embedded in the entrepreneurial domains of founding, inventing, and developing (Cardon *et al.*, 2013).

The inventing domain is characterized by individuals with passion for searching opportunities, delighted for always being on the run to usher in new products or services or new ways of doing things to solve current problems (Cardon, Wincent, *et al.*, 2009; Cardon *et al.*, 2013). The passion for founding, as discussed by Cardon *et al.*, (2009), has to do with organisation of human, financial, and social resources required in creating a new venture. Most entrepreneurs are driven by the desire to find new venture (Zimmer, 1986), which signifies the achievement of being able to create something tangible that can be attributed to them (Katz & Gartner, 1988). Finding an organisation could be the central role in reflecting the self-identity of an individual entrepreneur (Cardon, 2008).

After finding is developing the organisation beyond its initial survival and successes, and it comes with the passion of growth and expansion (Cardon, Wincent, *et al.*, 2009). Entrepreneurs who are motivated by growing and expanding ventures (Cliff, 1998) always devise ways that will continue to promote the expansion of their organisations (Baum & Locke, 2004). Hence, entrepreneurs who experience passion for developing

their own ventures might be quite cherished in making return on their investments by generating more sales, engaging employees and other stakeholders, or even acquiring new investors to support the businesses (Cardon *et al.*, 2013).

In a recent study, Cardon *et al.*, (2013) conducted a number of empirical studies employing samples from suitable populations to develop and validate the instrument that took into account entrepreneurial passion with its dimensions. Their study revealed entrepreneurial passion dimensions of intense positive feelings and identity centrality in the domains of inventing, founding, and developing as different conceptually and empirically from one another. The outcomes also showed that a good measure of entrepreneurial passion integrated with the relationship between the feelings and the centrality of the entrepreneur's self-identity for each domain. However, given the nature of the proposed sample among university students, this study believed that the passion for inventing and founding is more likely to be experienced and nurtured prior to the real activity while still in school. Intention, here, becomes the main focus.

Moreover, studies establishing a direct link between entrepreneurial passion and entrepreneurial intention which is believed to immediately predict entrepreneurial behaviour (Bagozzi *et al.*, 1989; Krueger Jr *et al.*, 2000) are rarely available. An example of the few exceptions is the study by Kickul, and Krueger (2005), who suggested that entrepreneurial intensity, which is a proxy for entrepreneurial passion, had been related with intentions for intuitive, impacting more on the intentions of intuitive than analytics' intentions. This study, therefore, examined the relationship between entrepreneurial



passion (passion for inventing and passion for founding) and entrepreneurial intentions. Hence, this study proposed the following hypotheses:

*H6: Entrepreneurial passion for inventing is positively related to entrepreneurial intention.*

*H7: Entrepreneurial passion for founding is positively related to entrepreneurial intention.*

### **3.4.6 Perceived Creativity Disposition as a Mediator**

This study argued that creativity performs a mediating role in the relationship between effective entrepreneurship education and entrepreneurial intention. Godfrey (1996) asserted that creativity is necessary for continuing reinventing businesses and suggested unleashing imagination of people through playfulness and fun. It is also understood from history that educational process design has certain implications for the capabilities of individuals engaged in innovative activities (Baumol, 2004) by providing to future entrepreneurs the analytical tools necessary for engaging in innovative related activities, as well as encouraging creativity and imagination in a simplified manner. Hence, it has been generally agreed that creativity is a skill that can be learned (Runco, 2004) and taught through support activities, encouragement, and support to individuals (Williamson, 2001).

Therefore, Tepper and Kuh (2011) believed that creativity can be nurtured by training and developing specific skills over time, and they also explained that the acquisition of

such training is found in arts-degree programmes where creativity skills are seriously cultivated. Hence, effective enterprise/entrepreneurship education must develop enterprising skills (Pittaway *et al.*, 2009b) and the key enterprising skill is creative thinking (Gibb, 1993; Gibb, 2002a). That is why creativity development among students in business schools has become a matter of priority (Ghosh, 2014).

Furthermore, the study by Zampetakis *et al.*, (2007) indicated that proactivity and creativity development programmes are useful in increasing entrepreneurial desirability among students. Consequently, the intention-based models support the inclusion of entrepreneurial desirability as a way of influencing the intention to create a business (Krueger Jr *et al.*, 2000). Moreover, Peterman and Kennedy (2003) gave support for exposing students to entrepreneurship education as an additional mechanism for increasing the desirability and the feasibility of business creation, whereas Kerr and Lloyd (2008) showed that the artful learning opportunities increased an individual's ability to be mindful of the creativity he/she possessed, as well as others. Hence, creativity occupies a central position in the process of entrepreneurship.

Consequently, entrepreneurship has been described as a good playing ground for creative individuals to be successful (Batchelor & Burch, 2012) because creativity involves novelty and usefulness, which are important to entrepreneurship (Amabile, 1996; Ward, 2004). Hence, it is expected that creative individuals will exhibit entrepreneurship behaviour (Ward, 2004). In regard to this relationship, Hamidi, Wennberg, and Berglund (2008) found support for the creativity variable in predicting entrepreneurship intention,

as their study also clearly showed the need for considering creativity in entrepreneurial intention-based models. In a related study, Zampetakis, Gotsi, Andriopoulos, and Moustakis (2011) suggested that the more creative students thought they were, the higher their entrepreneurial intentions were. In the same study, entrepreneurship course attended was found to moderate the effect of individual creativity on entrepreneurial intentions.

However, suggesting the overall linkages, Lekoko, Rankhumise, and Ras (2012) suggested that effective entrepreneurship education is important in providing students with entrepreneurial skills and competencies, which are expected to drive students' entrepreneurial intention. In another study, Karimi, Biemans, Lans, Mulder, and Chizari (2012) employed the TPB to assess the influence of entrepreneurship education programmes (EEPs), as EEPs were found to significantly influence perceived behavioural control and subjective norms. In addition, Zainuddin and Rejab (2010) studied the specialized entrepreneurship programmes introduced to "ME generation", and showed that the students believed that the specialized entrepreneurship education contributed to increasing entrepreneurial self-efficacy, and subsequently, towards their self-employment intention, and therefore, increased their employability value.

Following in a similar direction, Byabashaija and Katono (2011) conducted an analysis to observe any modification in the attitudes and intentions of students at the end of the entrepreneurship course. The results showed little, but considerable changes in attitudes and a significant mediating role of attitude. Hence, the findings presented lessons for policy makers and raised more questions for researchers, probably on how effective such

courses in entrepreneurship education can be and the mechanism that could explain its effectiveness on entrepreneurial intention. Therefore, this study had been sought to determine the mediating role of perceived creativity dispositions in the relationship between perceived effective entrepreneurship education and entrepreneurial intention of university students, as self-assessment of creativity disposition from the students' point of view would provide a valid assessment. Hence, the study proposed the following hypothesis:

*H8: Perceived creativity disposition mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.*

#### **3.4.7 Entrepreneurial Passion as a Mediator**

This study also asserted that entrepreneurial passion mediated the relationship between perceived effective entrepreneurship education and entrepreneurial intention. Understanding the role of behavioural and cognitive factors in new venture creation process is of crucial importance, as entrepreneurs play a fundamental role in new venture creation. Hence, careful consideration of the formation of their behaviour and cognition would be valuable in clarifying the complex process of entrepreneurship (Baron, 2007). Passion as a motivational construct has affective, cognitive, and behavioural components (Chen *et al.*, 2009). It, therefore, influences people's behaviour (Donahue, 2008; Cardon, Sudek, *et al.*, 2009; Murnieks *et al.*, 2011) and specifically accounts for variance in entrepreneurial behaviour (Murnieks *et al.*, 2011). Hence, Chen, Yao, and Kotha (2009)

defined entrepreneurial passion as the extreme emotional condition of an entrepreneur manifested through cognitive and behavioural actions that are personally valuable.

In addition, previous researches have connected prior knowledge, creativity, and cognitive mechanisms to the process of opportunity identification and exploitation. Following this, Corbett (2005) suggested that to fully comprehend the nature of the entrepreneurial process, the question of how individuals learn and the modes of learning that influence opportunity identification and exploitation should be understood. Their study revealed the fact that learning perspective on entrepreneurship does not only push students to focus on discovering new opportunities, but also the passion for searching opportunities that best fit their identity as future entrepreneurs.

Studies in the past have also established that relationship exists between passion and learning activity engagement (Bonneville-Roussy *et al.*, 2013). The activity engagement is described as involvement in a specifically designed educational activity that actually encourages persistence in higher education (Kuh *et al.*, 2008). For entrepreneurial activity engagement, however, the entrepreneurial learning outcome for individual student is believed to be tangible, as well as emotional, because it produces the feeling and the experience of getting close to entrepreneurial activities, experiences, and emotions (Pittaway *et al.*, 2009a).

It is also understood from literature that psychological characteristics affect individuals' entrepreneurial intention, while experiential learning techniques can be instrumental in changing emotional competences (Padilla-Meléndez *et al.*, 2014). Learning and emotion move together as emotion is an essential factor in learning (Brown, 2000; Kyro, 2008). Hence, entrepreneurship education should communicate entrepreneurship as an emotionally intense process where there is a mix of excitement with anxiety and fear, with common experiences of high commitment, uncertainty, and lack of control (Lackéus & Williams Middleton, 2011).

Besides, scholars have agreed that emotion-based perspectives are essential in considering new approaches to research and teaching entrepreneurship (Gibb, 2002b). This “emotional exposure will play a significant role in creating an environment within which effective student learning can be conducted” (Pittaway & Cope, 2007). Consequently, a learning environment that creates a near real situation in teaching activities will generate greater emotion (Guedes Gondim & Mutti, 2011). In conclusion, Souitaris *et al.*, (2007a) emphasised that emotional element of inspiration was found to be the most influenced benefit of entrepreneurship programme. Hence, entrepreneurship education should be capable of developing the passion in students to pursue entrepreneurial career (Baum, & Locke, 2004).

It can be concluded, therefore, that the perception of effectiveness in entrepreneurship education is capable of developing entrepreneurial passion in individuals, which invariably will lead to performing the activity (venture creation). Consequently, it is

logical that passion is build prior to setting up of ventures since it is necessary for entrepreneurship success. However, Cardon *et al.*, (2013) showed that a good measure of entrepreneurial passion integrates the relationship between the feelings and the centrality of the entrepreneur's self-identity for each domain of founding, inventing, and developing (Cardon *et al.*, 2013). Based on the above arguments, this study states the following hypotheses:

*H9: Entrepreneurial passion for inventing mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.*

*H10: Entrepreneurial passion for founding mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.*

#### **3.4.8 Perceived University Support as a Moderator**

The study predicted a positive moderating effect of perceived university support on the positive relationships between perceived effective entrepreneurship education and perceived creativity disposition, as well as entrepreneurial passion for inventing and entrepreneurial passion for founding. Universities are seen as promoters of entrepreneurship by providing entrepreneurship education and complimentary supports that are necessary to boost the potential intentions of venture creation and subsequent growth, in other words, they are the key players in the provision of training (OECD, 2010; Romero *et al.*, 2011). Hence, when high quality entrepreneurship programmes are delivered, then higher number of entrepreneurs will emerge (Wang, & Verzat, 2011).

Moreover, according to Bechard and Toulouse (1998), what is responsible for influencing students' decision to become entrepreneurs is embedded in the universities. In affirmation, Franke and Luthje (2004) emphasised that universities do have control over some factors that can enhance students' entrepreneurial intentions; they initiate entrepreneurial spirit by arranging and providing a conducive, creative, and supportive atmosphere that is necessary for imaginative thinking that is useful and applicable. Accordingly, the university environment is the right place to mould and to influence students to build entrepreneurial intention (Franke & Lüthje, 2004). Therefore, environmental perception guides individual behaviour (OECD, 2010).

In addition, entrepreneurship career development can be supported by universities (Turker & Selcuk, 2009) by employing role models in training, providing entrepreneurial support network, and encouraging business plan competitions among students (Lüthje & Franke, 2003). For example, it was found that students who participated in business plan competition reported to have an impact in their career choice decision (Fleming, 1994). Meanwhile, according to Keat *et al.*, (2011), and Wang and Verzat (2011), universities play significant roles in entrepreneurial curriculum and content development, as well as making entrepreneurship appealing to students. The entrepreneurial university is, therefore, considered to be the source of recognizing entrepreneurial opportunities, and thus, drivers of subsequent entrepreneurial action (Edelman & Yli-Renko, 2010; Urbano & Guerrero, 2013). However, despite efforts by some scholars to discuss the impact of university environment on entrepreneurial intentions, the understanding of the role of university as it enhances the process of entrepreneurial intentions still remains unclear.



Furthermore, Geissler, Jahn, Loebel, and Zanger (2012) perceived the university entrepreneurial climate as supportive, besides influencing opportunity identification, and therefore, increase entrepreneurial intention, which may thereafter results in entrepreneurial behaviour. It was observed, however, that the entrepreneurial climate has no direct impact on intention formation. This suggests that the university environment is an indirect motivator. Maina (2011) also showed that the college environment and exposure to entrepreneurship experiences indirectly had an impact on entrepreneurial intentions by impacting on self-efficacy and perceptions of desirability. Hence, universities provide a level playground for breeding entrepreneurs (Johannisson *et al.*, 2001; Wang & Verzat, 2011).

Moreover, factors of personality and good supporting environment could influence a person's creative ability (Ayob *et al.*, 2011; Fritsch & Sorgner, 2013). So, universities and colleges are expected to nurture creativity in their students (Florida, 2002). Therefore, researchers in the creativity domain have focused on the relationship between teaching and individual students' entrepreneurship (Feng, 2013). Hence, creativity is not a static personality; it can change and be enhanced (Eisenberger & Armeli, 1997), and so, training becomes a focal point for creative ability enhancement (Cropley & Cropley, 2000). Likewise, a learning environment that creates a near real situation in teaching activities will generate greater emotion (Guedes Gondim & Mutti, 2011). Hence, this study considered the university to deliver in this direction.

However, most studies were concerned about the impact of personal and environmental factors i.e. university environment on intention, but little is known about the interaction between university support and personality or other factors said to influence the antecedents of entrepreneurial intention. This is especially necessary to determine how university environment could strengthen the relationships between entrepreneurship education, personality traits, and entrepreneurial intention; given that previous studies have shown that personality characteristics have weak or indirect effect on intention (Lüthje & Franke, 2003; Franke & Lüthje, 2004; Schwarz *et al.*, 2009). Furthermore, previous studies have observed that university environment indirectly influenced entrepreneurial intentions (Maina, 2011; Geissler *et al.*, 2012) by impacting on self-efficacy and perceptions of desirability (Maina, 2011), whereby the role of university environment in promoting intention by strengthening the effects of factors has been known to influence the intention that needs to be established. Thus, this study examined the moderating role of the perception of university support on the relationship between perceived effective entrepreneurship education, the perception of personal creativity disposition, and entrepreneurial passion. The study, therefore, hypothesized the following:

*H11: Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and perceived creativity disposition, such that the relationship is stronger for higher perception of university support.*

*H12: Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for*

*inventing, such that the relationship is stronger for higher perception of university support.*

*H13: Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for founding, such that the relationship is stronger for higher perception of university support.*

### **3.5 Research Design**

This research had been based on the quantitative approach. Hence, the study had been set to test the hypotheses of the relationships between six constructs; perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing, entrepreneurial passion for founding, perceived university support, and entrepreneurial intentions. The study was also a cross-sectional research. Data were collected from undergraduate university students within a short period of time to determining their entrepreneurial intentions. Specifically, it was conducted among students that were taught entrepreneurship education at various levels of their studies across three universities. The cross sectional study was undertaken within short period of three months between May and June in 2014.

Survey research was also employed, whereby questionnaires were administered to elicit relevant information concerning the variables of the study. This had been necessary in order to answer the research questions, as well as to achieve the objectives of this study.

The survey was conducted in order to measure the variables, to test the hypotheses, and to infer questions about individual experiences and characteristics (Neuman, 2007).

### **3.6 Instrumentation and Measurement of Variables**

As mentioned earlier, this study administered questionnaires to entrepreneurship students of Nigerian universities. The questionnaire had been divided into two parts; the first consisted of items measuring all the variables in the study, while the second retrieved details concerning demographic characteristics of gender, university, faculty, profession and level of study of the respondents. The items measuring the variables of the study were developed on a 7-point Likert scale with different anchors.

Furthermore, all items measuring the variables of the study except perceived creativity disposition were adopted from different sources in their original forms. The items for the perception of university support were adopted from two sources, the second source been an extension of the first source. However, few items were dropped in the process of adapting the measures for perceived creativity disposition. In addition, few modifications were made in terms of wordings the remaining items to suit students' context. Finally, all variables reliabilities were reported.

### 3.6.1 Effective Entrepreneurship Education

Perceived effective entrepreneurship education is operationalised in this study as the perception of students on the extent to which entrepreneurship education acquired increases their understanding of why entrepreneurs act, what need to be done, how to start a venture, who to know and when to act in the entrepreneurship process. This study adopted 5 items to measure perception of the effectiveness of entrepreneurship education from Souitaris *et al.*, (2007b). These items were initially developed as a perceptual scale to measure learning from an entrepreneurship programme. The choice of perceptual measure of education had been in line with the suggestion that perception of environment can have a strong prediction on entrepreneurial activities than the actual situation (Zahra, 1993). The students were asked five questions to respond to, based on a 7-point Likert scale of (1=not at all, 7=to a large extent). Examples of the questions are; “to what extent did the entrepreneurship education increase your understanding of the attitudes, values, and motivation of entrepreneurs”?, “to what extent did the entrepreneurship education increase your understanding of the actions someone has to take in order to start a business”?, “to what extent did the entrepreneurship education enhance your practical management skills in order to start a business”, etc. The authors reported a reliability of  $\alpha=0.71$  and the construct was found to be unidimensional, all items were loaded on a single factor. In addition, the authors validated their measure by correlating the scores on the perceptual scale with the grades for the entrepreneurship courses. They found positive and significant correlation ( $r=0.71$ ,  $p<0.001$ ), hence supporting the validity of the learning measure.

### 3.6.2 Perceived Creativity Disposition

This study operationalised perceived creativity disposition as the individual student perception of his ability to come up with creative and innovative ideas to solve problems and increase performance. The perception of creativity disposition was measured using 8 items adapted from Zhou and George (2001). The 13 items developed for their study was to measure creativity of employees as rated by supervisors. However, 5 items dealing with core employee characteristics were not suitable for measuring students' perceived creativity disposition and henceforth removed. This study employed this construct in order to assess individual students' perception of their capability of producing novel and useful ideas. The responses to all 8 items were made on 7-point Likert-type scale of (1 = strongly disagree, 7 = strongly agree). Examples of the items are: "I come up with creative solutions to problems", "I am a good source of creative ideas", "I came up with new and practical ideas to improve performance", etc. Darini *et al.*, (2011) also utilized similar eight items to measure self-rated creativity and had obtained a Cronbach's of 0.90. Besides, previous studies have also found this measure to be reliable (Zhou, 2003; Perry-Smith, 2006).

### 3.6.3 Entrepreneurial Passion

This study defined entrepreneurial passion in two domains of inventing and founding. Entrepreneurial passion for inventing is operationalised in this study as the believe of a student about the excitement derived in the process of establishing and searching for new ways of introducing products and services, as well as the excitement of been identified with inventing solution to problems. Entrepreneurial passion for founding is operationalised in this study as the feeling of joy associated with the thinking of founding and nurturing a business as well as the excitement of been identified with a business. This study measured entrepreneurial passion using validated 9 items adopted from Cardon *et al.*, (2013). The measure of entrepreneurial passion was based on two scopes of positive feelings and centrality of identity in two domains of inventing and founding. This had been in response to the suggestion by the authors to study the feeling of entrepreneurial passion in each domain independently, and warned against lumping measures, as well as in taking average of all the domains to measure entrepreneurial passion.

Also, Cardon *et al.*, (2013) recommended that future researchers should not just examine the separate effects of entrepreneurial passion intensity of positive feelings and centrality identity, but also consider the interaction of the two dimensions in each domain. Hence, this study lumped the items of the positive feelings and identity centrality for each of the inventing and founding domains. Five items were employed for the inventing domain, while four items measured entrepreneurial passion for the founding domain. Examples of

items for the inventing domain are; “It is exciting to figure out new ways to solve unmet market needs that can be commercialized”, “Inventing new solutions to problems is an important part of who I am”, etc. Meanwhile, some samples of items for the founding domain are; “Nurturing a new business through its emerging success is enjoyable”, “Being the founder of a business is an important part of who I am”, etc. All the 9 items were rated on 7-point Likert-type scale of (1 = strongly disagree, 7 = strongly agree). The alpha reliabilities for the subscales of inventing and founding were .85 and .72 respectively.

Nonetheless, it is important to note that the model developed in this study excluded the entrepreneurial passion domain of developing as specified earlier in the literature of the study. This is as a result of the nature of the sample population of students, and according to Cardon *et al.*, (2013); researchers could decide to employ one or more domains of passion as suitable for their studies.

#### **3.6.4 Perception of University Support**

The perception of university support in this study reflects the degree to which individual student perceived his university’s effort in encouraging entrepreneurship by providing functioning infrastructure, creative atmosphere and resources towards making the entrepreneurship programme effective. The measure for perceived university support is adopted from Autio *et al.* (1997) and Keat *et al.* (2011), the instrument consist of 14-items. Specifically 4 items were developed by the first author while the second extended



the items with additional 10 items. Example of the items included are: “In my university, students are actively encouraged to pursue their own business ideas”, “The creative atmosphere inspired us to develop ideas for new businesses”, etc. All the responses were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The reliability obtained for the 4 items measuring university support was a cronbach’s alpha of .70.

### **3.6.5 Entrepreneurial Intention**

Entrepreneurial intention in this study indicates the amount of effort that individual student is prepared to make in order to carry out future entrepreneurial behaviour. The 6 items that measured entrepreneurial intention were obtained from Linan and Chen (2009). Some of the sample items are: “I am ready to do anything to be an entrepreneur”, “I am determined to create a firm in the future”, etc. The items were measured on a rate of 7-point Likert scale (1 = total disagreement, 7 = total agreement). The reliability analyses performed for each subsample by the authors produced Cronbach’s alphas that ranged from .776 to .953. Table 3.2 shows the summary of measures of variables adopted/adapted.

Table 3.2  
*Summary of measures of variables adopted*

<b>Variables</b>	<b>Items</b>	<b>Sources</b>	<b>Cronbach's Alpha (<math>\alpha</math>)</b>
Entrepreneurial Intentions	6	Linñan and Chen (2009)	.78 to .95
Perceived effective Entrepreneurship Education	5	Souitaris <i>et al.</i> , (2007)	.71
Entrepreneurial Passion for Inventing	5	Cardon <i>et al.</i> , (2013)	.85
Entrepreneurial Passion for Founding	4	Cardon <i>et al.</i> , (2013)	.72
Perceived Creativity Disposition	8	Zhou and George (2001)	.90
University Support	14	Autio <i>et al.</i> , (1997) & Keat (2011)	.70

### 3.7 Population of the Study

The population of this study has been the students of federal universities in the North-western of Nigeria. Particularly, the study concentrated on the students from the famous three federal universities from the North-western region of the country. The choice of this region of the country was based on the reality that the population of the entire Nigerian public universities students is so large to be covered within the specified period of this study. Besides, the characteristics of the population had been found to be homogeneous, and therefore, the expected outcome was believed to be the same. In addition, the choice

of the federal universities was backed up by the fact that only these universities have so far established the entrepreneurship programme, as directed by the federal government of the country.

Again, these universities are highly populated with students as they have been the largest and the oldest federal universities from three different states in the North West region of Nigeria. Therefore, the researcher believed that the choice of the region and the universities had been appropriate and sufficient to elicit valid findings pertaining to the variables and their relationships. Furthermore, the choice of students was supported by their current state as potential entrepreneurs and also the first group of students to benefit from the mounted entrepreneurship programme for all vocation. Hence, they had been suitable for the entrepreneurial intention study.

The three universities selected were; the premier university of the Northern Nigeria, Ahmadu Bello University (ABU), Zaria in Kaduna State (which is situated in the north-western zone); Bayero University Kano (BUK) in Kano State; and Usman Danfodio University Sokoto (UDUS) in Sokoto State. The total population of the benefiting students from the three universities, as obtained from the management of the schools and the entrepreneurship programme coordinating body, had been 14,376; with ABU having 6,665, BUK with 4,821, and UDUS had 2,890. Table 3.3 presents the population by institution. Refer to appendix A for a more detailed breakdown by faculties and departments.

Table 3.3  
*Population summary*

S/No.	Institutions	Number of entrepreneurial Students
1.	Ahmadu Bello University, Zaria	6,665
2.	Bayero University Kano, Kano	4,821
3.	Usman Danfodio University, Sokoto	2,890
<b>Total</b>		<b>14,376</b>

### 3.8 Sample Size Determination

The sample size for this study was determined by using the Krejcie and Morgan's (1970) table based on a given population. Hence, considering the total population of 14, 376 in this study, the sample size had been 375 students. The sample size of 375 was deemed appropriate in consideration of the suggestion of Roscoe (1975), that for most researches, a sample size of between 30 and less than 500 is appropriate. Additionally, according to Roscoe's (1975) proposed rule of thumb for determining sample size for multivariate research, the sample size should be "ten times or more" than the number of the variables in the study. The current study had 6 variables and multiplying it by 10 gives 60; hence the sample size of 375 had been adequate and acceptable. However, Gregg (2008) suggested that where for example stratified or multistage sampling methods are employed, adjustments to certain sample size formulas are necessary especially for more complex designs or for more complex analysis rather than estimating proportions and means. He further suggested that as rules of thumb researchers can double the calculated

sample size for a simple random sample. In addition, Hair, Wolfinbarger, Ortinau, and Bush (2008) also recommended that doubling the size of the sample can reduce the sampling error which is the bias that results from mistakes in either the selection process for prospective sampling units or in determining the sample size. Hence, for this study the calculated sample size of 375 is doubled to 750 sample size.

### **3.9 Sampling Technique**

The sampling design for this study was stratified random sampling. The study specifically employed the use of proportionate stratified random sampling. In a stratified random sampling a population is divided into subgroups, or strata, and random samples are taken, in proportion to the population, from each of the strata created. The participants in each of the stratum formed have similar attributes and characteristics. The choice of stratification is important because of its efficiency in sampling design and as a good choice when different information is expected from the various strata within a population (Sekeran, 2011). Hence, this choice was necessary, given that three different universities had different environments and entrepreneurship education structures, as well as management. In addition, the different faculties and courses of study within the universities necessitated the use of stratified sampling.

Moreover, in a proportionate stratified random sampling the sample size of each stratum is proportionate to the population size of the stratum when viewed against the entire

population. In other words each stratum has the same sampling fraction. However, the stratification was carried out in two phases. The first stage was stratification based on the universities selected, and then, the number of students represented in the sample from each stratum had been proportionate to the total number of students in the respective strata. To determine the sampling fraction, the determined sample size of the study is divided by the total population of students from the three universities. For example, in table 4.4, 750 is divided by 14376 to obtain 0.0522 or 5.22%, subsequently, the fraction is multiplied with each of the students' population in the individual university to arrive at the proportionate sampling. Hence, Table 3.4 gives a clear picture for the first phase of the stratification.

Table 3.4  
*Proportionate Stratified Sampling*

University	Number of Students	Proportionate Sampling (5.22% Students)
Ahmadu Bello University, Zaria	6,665	348
Bayero University Kano, Kano	4,821	251
Usman Danfodio University, Sokoto	2,890	151
<b>Total</b>	<b>14,376</b>	<b>750</b>

On the other hand, the second stage was stratification based on the faculties within the selected universities. The sample size based on faculties for each of the selected university was calculated by considering the proportionate sample determined for each

university in the first stage. For example, 348 samples were drawn from 12 faculties of Ahmadu Bello University, Zaria, etc. Therefore, the number of students represented in the sample from each faculty (stratum) had been proportionate to the total number of students in the respective faculties (strata). Tables 3.5, 3.6, and 3.7 represent the proportionate stratified sampling for ABU, BUK, and UDUS respectively.

Table 3.5  
*Proportionate Stratified Sampling (ABU)*

<b>Faculties</b>	<b>Number of Students</b>	<b>Proportionate Sampling (5.22% Students)</b>
Administration	910	48
Agriculture	143	7
Arts	655	34
Education	1203	63
Engineering	615	32
Environmental Sciences	413	22
Law	263	14
Medicine	271	14
Pharmaceutical Sciences	153	8
Sciences	1246	65
Social Sciences	751	39
Veterinary Medicine	42	2
<b>Total</b>	<b>6,665</b>	<b>348</b>

Table 3.6  
*Proportionate Stratified Sampling (BUK)*

<b>Faculties</b>	<b>Total No. of Student</b>	<b>Proportionate Sampling (5.21% Students)</b>
Agriculture	130	7
Arts and Islamic Studies	552	29
Computer Science and Information Technology	103	5
Education	1183	61
Engineering	280	15
Law	228	12
Medicine	239	12
Science	643	34
Social and Management Sciences	1463	76
<b>Total</b>	<b>4821</b>	<b>251</b>

Table 3.7  
*Proportionate Stratified Sampling (UDUS)*

<b>Faculties</b>	<b>Total No. of Student</b>	<b>Proportionate Sampling (5.22% Students)</b>
Agriculture	180	9
Science	910	48
Management Science	340	18
Pharmaceutical Science	60	3
Veterinary Medicine	100	5
Law	200	10
Art and Islamic Studies	50	3
Education and Extension Services	950	50
School of Medical Laboratory Sciences	100	5
<b>Total</b>	<b>2890</b>	<b>151</b>



However, after the determination of sample size within each faculty (stratum), the departments to represent each faculty were selected at random. The number of department(s) selected at random was based on the number of sample size determined for that faculty. Finally, the sampled students were selected at random from the randomly sampled department(s). The random sampling of students was carried out during entrepreneurship education lectures and examination periods in classes by the lecturers and coordinators of the entrepreneurship programme.

### **3.10 Pilot Study**

Pilot study is an important part of questionnaire construction. When a study is conducted, feedback on how simple the questionnaire is to be completed and which concepts are understood or not for the respondents are discovered. Hence, the pilot survey is carried out to determine the reliability and the validity of the measures (Flynn, Sakakibara, Schroeder, Bates, & Flynn, 1990) for the variables in the study. Therefore, a total of 111 answered questionnaires were obtained from students drawn from the Department of Business Administration in Ahmadu Bello University, Zaria, for the purpose of pilot testing. Based on the responses to the questionnaires, the items on the questionnaires were judged to be suitable.

On top of that, the study employed the use of SmartPLS 2.0 (Ringle, Wende, & Will, 2005) to assess the measurement model in order to determine the reliability and the

validity of the measures. The reflective measures were assessed based on their indicators' internal consistency reliability and convergent validity. The assessment of the constructs for internal consistency reliability was reflected by the composite reliability values (Chin, 1998), which showed good reliability as all values were above 0.7 (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) (see Table 3.8). As for the assessment of the indicators for convergent validity, most of the reflective indicators (26) had loadings at above 0.60 (see Table 3.8). The exceptions were seven items; one was from the perceived creativity disposition, while the remaining were from the perception of university support, as all showed loadings of less than 0.5, and were, therefore, refined for the final data collection. Nonetheless, this is not needed in the case of formative constructs. Thus, the indicators in the reflective measurement models reached a satisfactory convergent validity.

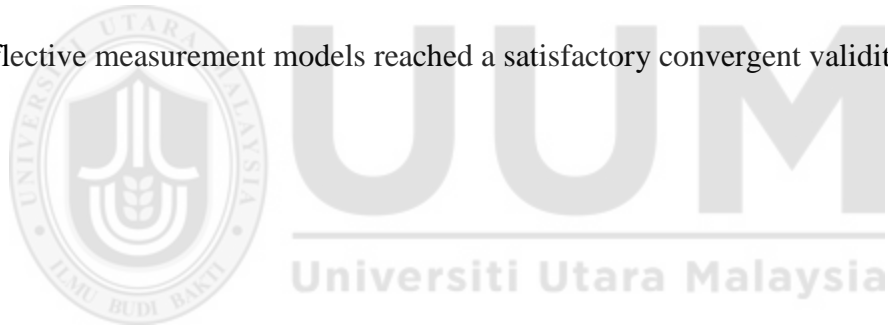


Table 3.8

*Internal consistency, convergent validity, and average variance extracted (AVE) for the first-order constructs*

<b>Construct</b>	<b>Indicators</b>	<b>Loadings</b>	<b>Composite Reliability</b>	<b>AVE</b>
Entrepreneurial Intention	EI1	.606	.930	.690
	EI2	.844		
	EI3	.891		
	EI4	.889		
	EI5	.881		
	EI6	.839		
Identity Centrality for Founding	ICF	1.000	1.000	1.000
Identity Centrality for Inventing	ICI	1.000	1.000	1.000
Intense Positive Feeling for Founding	IPFF1	.719	.824	.610
	IPFF2	.834		
	IPFF3	.787		
Intense Positive Feeling for Inventing	IPFI1	.814	.918	.737
	IPFI2	.879		
	IPFI3	.911		
	IPFI4	.826		
Perceived Creativity Disposition	PCD2	.793	.912	.597
	PCD3	.734		
	PCD4	.860		
	PCD5	.770		
	PCD6	.805		
	PCD7	.743		
	PCD8	.689		
	Perceived Effective Entrepreneurship Education	PEEE1		
PEEE2		.877		
PEEE3		.858		
PEEE4		.836		
PEEE5		.848		
Perception of University Support	PUS14	.594	.896	.523
	PUS2	.512		
	PUS3	.732		
	PUS4	.803		
	PUS5	.808		
	PUS6	.741		
	PUS7	.806		
	PUS8	.731		

### **3.11 Data Collection Procedures**

The survey research was conducted by administering questionnaires to the respondents. The researcher collected letter of introduction from the postgraduate school (Othman Yeop Abdullah Graduate School of Business). This was to assure the relevant authorities on the mission of collecting data for purely academic research. Similarly, a cover letter was attached to the questionnaire explaining the purpose of the research and ensuring confidentiality of individual information shared.

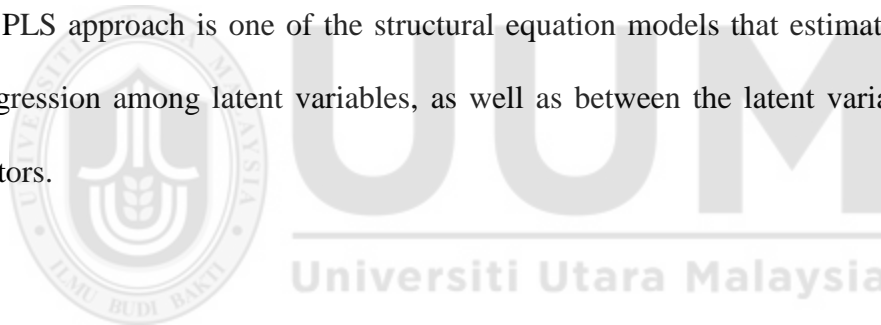
The study involved research assistants and the entrepreneurship coordinating teams of the various universities in the administration and the collection process of the questionnaire. This was to ensure efficient and effective data collection. Course lecturers and class representatives were also involved in the administering process at one point or the other where necessary. Since the process involved three states of the north-western states, the data collection lasted for three months.

### **3.12 Data Analysis Technique**

Statistical Package for Social Sciences (SPSS) platform was used for data entry and it was employed in running some preliminary and basic analyses. For example, it was used for detecting and replacing missing values, testing for normality, as well as detecting and treating outliers. It was also used for running descriptive statistics for demographic data,

as well as the variables of the study, for example, frequency, mean, and standard deviation.

In order to test the sets of hypotheses and to examine the complex relationships involving the moderating role of the perception of university support and the mediating roles of perceived creativity disposition and the entrepreneurial passion for inventing and founding, Partial Least Squares (PLS) path modelling was employed (Henseler, Ringle, & Sinkovics, 2009). The PLS, developed by Wold (1985), is a method for estimating path models that involves latent constructs that are indirectly measured by multiple indicators. Thus, PLS approach is one of the structural equation models that estimate relationships via regression among latent variables, as well as between the latent variables and their indicators.



In fact, several reasons had motivated for the use of PLS path modelling to test the hypotheses in this study. First, PLS path modelling is suitable for a relatively complex model, with a large number of indicators or latent variables; and hence, it is good for study that involves relationships modelled with moderator and mediators, as well as hybrid formative second order variables. Second, PLS is used in a situation where the relationship between the latent variables and their measures has to be modelled in different ways (formative and reflective). Again, the variables and their measures in this current study were modelled with both formative and reflective measures; hence,

necessitated the use of PLS, as the use of covariance methods to examine formative constructs raises numerous difficulties (Petter, Straub, & Rai, 2007).

Third, PLS has less restriction on assumptions. For example, normality of data distribution is not required. However, PLS path modelling is more rigorous compared to correlations or regression analyses that assume error-free measurement (Arrègle *et al.*, 2012). In addition, PLS path modelling method is relaxed in terms of sample size. The rule of thumb recommended is that the minimum sample size in PLS analysis is ten times the number of indicators of the scale with the largest number of indicators (Chin & Newsted, 1999). Finally, PLS path modelling can perform equally well in terms of statistical data analysis as the covariance-based SEM (Henseler *et al.*, 2009). Hence, PLS is increasingly recognised as a valid approach to SEM in management and entrepreneurship research (Arrègle *et al.*, 2012). This study, therefore, employed the use of SmartPLS Version 2.0 (3M) software (Ringle *et al.*, 2005) to conduct its analyses. In the next section, the main results are presented.

### **3.13 Summary**

In this chapter, the procedure that was adhered to in conducting this research is presented. The underpinning theory and the theoretical framework for the study are presented. The hypotheses development was based on six constructs and two dimensions of entrepreneurial passion construct. The research had been explanatory in nature by employing the quantitative approach; it was also a cross-sectional and a survey research.

Past reliable and valid measures were adopted for all variables. The population of the study had been 14,376 students from three universities in three different states in the North-Western region of Nigeria. Based on the population, 375 samples were determined using the sample size determination table provided by Krejcie and Morgan (1970). However, the determined sample size of 375 was doubled to 750 to reduce sampling error (Hair *et al.*, 2008) and also because the study employed stratified sampling method (Gregg, 2008). Stratified random sampling technique was employed to determine the sample size based on universities and faculties. The final selection of responding students were done via random selection. Moreover, a pilot test was undertaken to determine the reliability and the validity of the measures for the variables in this study. The data were collected through questionnaire administration with the assistance of research support team and facilitated by the entrepreneurship coordinating team in each university, which comprised of the course lecturers and class representatives. The data collected were analysed by employing SPSS and SEM-PLS.

## CHAPTER FOUR

### DATA ANALYSIS AND FINDINGS

#### 4.1 Introduction

This chapter presents the analysis performed and the findings that were obtained based on the data collected. First, it provides details about the sample characteristics. Second, the initial data screening processes are presented. Third, it provides findings of the measurement model, the structural model, and in extension, the mediating effects, the moderating effects, and the power analysis.

As indicated in the previous chapter, this study employed the component based on SEM (PLS-SEM) or the PLS path modelling to carry out a confirmatory research based on the responses obtained from 595 observations. The study applied PLS 2.0 (Ringle *et al.*, 2005) to estimate the parameters of the model based on path weighting scheme (Henseler, 2012). Moreover, the study applied the non-parametric bootstrapping on the 595 samples and the no sign changes option in order to assess the significance of the path coefficients (Hair Jr, Hult, Ringle, & Sarstedt, 2013).



## 4.2 Response Rate

A total of 750 questionnaires were administered to students who embarked on entrepreneurship course in the following three Federal Universities in three different states of the North Western Nigeria; Ahmadu Bello University in Zaria (Kaduna State), Bayero University in Kano (Kano State), and Usman Danfodio University in Sokoto (Sokoto State). Out of these questionnaires, 704 were returned, resulting to 94% of response rate. The study received high number of response rate because most of the questionnaires were administered during examinations and lecture periods of the students with the assistance of the entrepreneurship coordinators and lecturers. The assistant researchers employed also followed some of the students to their dormitories in order to submit the questionnaires or to collect already distributed questionnaires. Pressley (1980), as well as Yu and Cooper (1983) have recommended such approaches to reduce or avoid error of non-response bias. Subsequently, these types of approaches have been proven to be useful in obtaining results that are encouraging (Yu & Cooper, 1983).

In further examination of the collected questionnaires, 14 were invalid as most questions were not answered. Hence, after considering the questionnaires based on responses to the items, 690 questionnaires were valid and imputed for analysis, yielding a total valid response rate of 92%. Table 4.1 provides the response rate for the questionnaires.

Table 4.1  
*Response Rate for the Questionnaires*

<b>Response</b>	<b>Rate</b>
Questionnaires distributed	750
Questionnaires returned	704
Questionnaires not returned	46
Invalid questionnaires	14
Usable questionnaires	690
Response rate	94%
Valid response rate	92%

### 4.3 Non-Response Bias

Non-response bias is defined as “the amount of errors that occur when inferences made about a population are based upon a non-representative sample, that is, in turn, due to low and unrepresentative survey response” (Shultz & Luloff, 1990). In other words, it is the difference between the answer of respondents and non-respondents, which could be of a serious concern if the self-selection is significant, as it can alter the validity of the results (Shultz & Luloff, 1990), hence, limiting the generalization to a whole population (Armstrong & Overton, 1977).

Generally, researches on non-response bias have concentrated on; following a procedure to reduce or eliminate the non-response error or follow a procedure of estimating the extent of the error when data are collected (Wilcox, Bellenger, & Rigdon, 1994). However, Armstrong and Overton (1977) suggested that one of the best ways to protect against non-response bias is to reduce non-response and recommended employing procedures to keep non-response below 30%. Wilcox *et al.*, (1994) also suggested that

response rate close to 100 percent should indicate minimal error, while those close to zero suggest significant potential for bias. Given that the non-response rate of this study had been eight percent; low enough to warrant minimal response bias (Armstrong & Overton, 1977), the study presumed the absence of no response bias. Hence, non-response rate did not pose any threat to the validity of this study (Shultz & Luloff, 1990).

“The general assumption is that the higher the response rate, the lower the potential of non-response error, and therefore, the better the survey” (Dillman, 1991). Thus, the study did not consider the estimation of response bias by comparing the early response and the possible late response (Armstrong & Overton, 1977).

#### **4.4 Data Screening and Data Preparation**

In conducting a multivariate analysis, it is fundamental to examine and screen the data in order to fulfil the required underlying assumptions related to the application of multivariate techniques (Hair, Black, Babin, Anderson, & Tatham, 2006). This also allowed the researcher to understand the nature of the data used for analysis.

The process of the descriptive statistics of the data, as recommended by Tabachnick and Fidell (2001), and Hair *et al.*, (2006) involves; the analysis of the missing values, analysis of outliers, test of normality of distribution of data, and test of multicollinearity. These analyses were carried out by using the IBM SPSS Statistics 18 software package.

#### 4.4.1 Analysis of Missing Values

Missing values in data could pose a big problem in any data analysis (Tabachnick & Fidell, 2001). To determine the extent of missing data, Hair *et al.*, (2006) suggested assessing (1) the percentage of variables with missing data for each case, and (2) the number of cases with missing data for each variable. This will show not only the extent, but also any high levels of missing data that occur (Hair *et al.*, 2006).

Therefore, in order to determine the extent of missing values for this study, all variables with missing values were listed. For the 42 variables in the SPSS output, 31 variables had missing data. For each variable, the percentage of missing data ranged from 0.1% to 2.2%, while for the entire data set, which had a total of 28,476 data points and a total of 125 missing point, the overall percentage of missing data was 0.4%. In detail, the analysis found eight variables with one missing value, five variables with two missing values, four variables with three missing values, four variables with four missing values, four variables with five missing values, one variable with six missing values, one variable with seven missing values, one variable with nine missing values, two variables with 11 missing values, and one variable with 15 missing values. Table 4.2 shows the missing data and the percentage by variable for only variables with missing data.

In assessing the missing data by case or observation, the study found 17 cases with 4.8% of missing values and 89 cases with 2.4% of missing values. Based on a rule of thumb, Hair *et al.*, (2006) recommended that missing data with less than 10% for an individual

case or observation can be ignored. Hence, based on the missing values, the analyses of the data set was retained as there was no substantial case that warranted deletion. However, the missing values were replaced based on mean substitution. Mean substitution is the most widely used method, as mean is the best single replacement value (Tabachnick & Fidell, 2001; Hair *et al.*, 2006). Besides, as a rule of thumb, Tabachnick and Fidell (2001) suggested replacing missing values using imputation method (one of which is the mean substitution method) when the missing values are less than 10%.

Table 4.2  
*Missing Data by Variable*

Variable	Missing		Variable	Missing	
	Count	Percentage		Count	Percentage
PEEE2	2	0.3	PUS2	3	0.4
PEEE3	1	0.1	PUS3	4	0.6
PEEE4	1	0.1	PUS5	1	0.1
PEEE5	1	0.1	PUS6	1	0.1
PCD2	5	0.7	PUS7	4	0.6
PCD3	5	0.7	PUS8	5	0.7
PCD4	3	0.4	PUS9 <sup>a</sup>	7	1.0
PCD5	2	0.3	PUS10	11	1.6
PCD6	2	0.3	PUS11 <sup>a</sup>	9	1.3
PCD8	3	0.4	PUS12 <sup>a</sup>	15	2.2
EPI3	2	0.3	PUS13	4	0.6
EPI4	1	0.1	PUS14	5	0.7
EPI5	6	0.9	EI2	4	0.6
EPF2	3	0.4	EI3	11	1.6
EPF4	2	0.3	EI4	1	0.1
			EI5	1	0.1

<sup>a</sup> Negatively worded Item

#### 4.4.2 Analysis of Outliers

Outliers are observations from a study with unique combination of characteristics that is identified as distinctly different from the other observations (Hair *et al.*, 2006), which could distort statistics (Tabachnick & Fidell, 2001). To detect multivariate outliers in this study, the Mahalanobis distance measure was employed. It is “a multivariate assessment of each observation across a set of variables” (Hair *et al.*, 2006:65). It is also one measure of multivariate distance that can evaluate each case or observation using the  $X^2$  distribution (Tabachnick & Fidell, 2001).

The Mahalanobis  $D^2$  measure is defined as “the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables” (Tabachnick & Fidell, 2001:74). The “method measures each observation’s distance in multidimensional space from the mean centre of all observations, providing a single value for each observation, no matter how many variables are considered” (Hair *et al.*, 2006:65). In evaluating the Mahalanobis distance, the  $X^2$  with degrees of freedom equal to the number of variables in the analysis is considered (Tabachnick & Fidell, 2001). It is suggested that the criterion for multivariate outliers is Mahalanobis distance at  $p < .001$  (Tabachnick & Fidell, 2001; Hair *et al.*, 2006).

The measure for Mahalanobis  $D^2$  in this study with 42 variables, revealed a chi square value of 74.75 (at  $p < 0.001$ ). This result indicated the presence of multivariate outliers in

the data set and all generated values of Mahalanobis greater than the threshold of 74.75 were deleted. Hence, 95 cases were deleted, leaving the study with valid cases of 595.

#### **4.4.3 Test of Normality**

One of the fundamental assumptions in multivariate analysis is normality, which refers to the shape of data distribution regarding individual metric variable and its correspondence to the normal distribution (Hair *et al.*, 2006). It is expected that the variation will not be substantially large; otherwise the resulting statistical test would be invalid. However, it is argued that a larger sample size could reduce the serious effect of non-normality (Hair *et al.*, 2006). Furthermore, as a non-parametric statistical method, PLS-SEM for example, does not require the data to be normally distributed (Hair, Hult, Ringle, & Sarstedt, 2014). Notwithstanding, the authors advised for verification to observe that the data are not too far from normal.

Even though the sample size for this study had been considered as large and PLS-SEM was employed for its analysis, it confirmed normality graphically (Tabachnick & Fidell, 2001). Hence, in a large sample of 200 and more, it is more important to observe the shape of the distribution graphically than observing skewness and kurtosis (Field, 2009). Hence, graphical examination was carried out by examining histograms and inspecting normal probability plots for all metric variables (Hair *et al.*, 2006). Normal probability plots provide a comparison of the actual observed data with expected data of a normal distribution (Tabachnick & Fidell, 2001; Hair *et al.*, 2006). The examination of

histograms and normal probability plots indicated no serious deviation from normality. Figure 4.1 shows that the data for this study assumed a normal curve, which indicated that the assumptions of normality had been adhered to. Nevertheless, it is believed that in management and social science research, strictly meeting statistical assumption is quite difficult (Bagozzi & Yi, 1988).

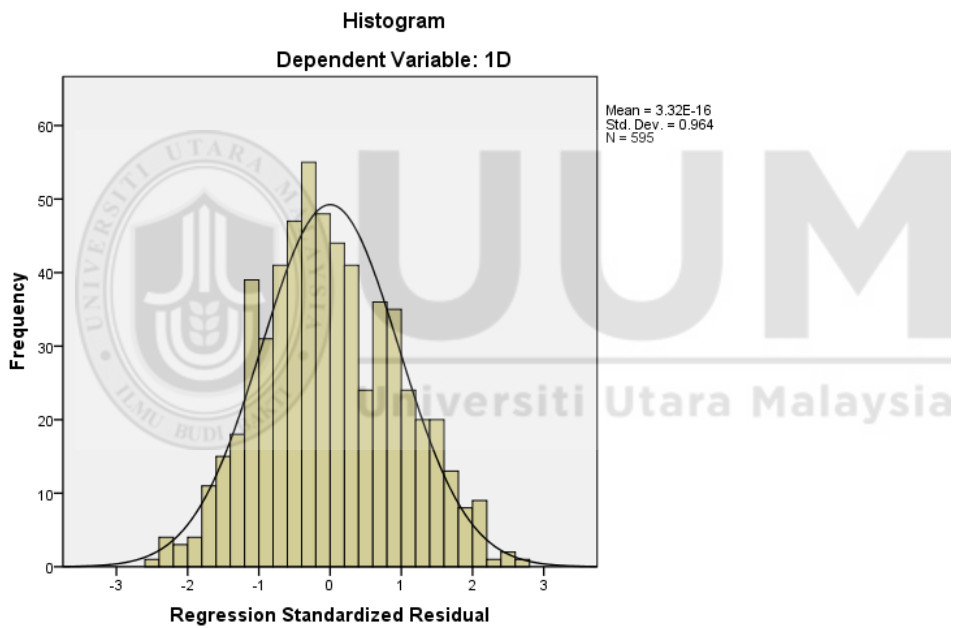


Figure 4.1  
*Histogram and normal probability plots*



#### 4.4.4 Test of Multicollinearity

A situation of high correlation between more than two independent variables is known as multicollinearity (Hair *et al.*, 2006). In correlations matrix, multicollinearity becomes a problem when the variables are too highly correlated (Tabachnick & Fidell, 2001). It is known to have serious effects on the estimation of the regression coefficients and their statistical significance tests (Hair *et al.*, 2006). This statistical problem is created by multicollinearity at a higher correlation, i.e. 0.90 and higher (Tabachnick & Fidell, 2001). The increase in multicollinearity complicates interpretation of variable because it becomes more difficult to determine the effect of any single variable because of their interrelationship (Hair *et al.*, 2006).

Hence, in order to detect multicollinearity, two steps were taken. First, the correlation matrix for the independent variables was examined to identify high correlations. The threshold of 0.90 was considered, as suggested by Tabachnick and Fidell (2001), and Hair *et al.*, (2006). The examination of the correlation matrix shown in Table 4.3 indicates that the highest value of correlation was 0.65. Hence, it suggested that none of the exogenous variables were highly correlated.

Table 4.3  
*Correlations Matrix of the exogenous latent variables*

	1	2	3	4	5
Entrepreneurial Passion for Founding	1				
Entrepreneurial Passion for Inventing	.645**	1			
Perceived Creativity Disposition	.493**	.617**	1		
Perceived Effective Entrepreneurship Education	.410**	.524**	.503**	1	
Perception of University Support	.356**	.480**	.430**	.325**	1

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

Second, the study examined the tolerance values and the variance inflation factor (VIF) using the IBM SPSS software to check for multicollinearity. Tolerance value is defined as “the amount of variability of the selected independent variable not explained by the other independent variable” (Hair *et al.*, 2006:227), while variance inflation factor (VIF) is the ‘inverse of the tolerance value’ (Hair *et al.*, 2006:227). The threshold of tolerance value below 0.10 and VIF value above 10 indicate high collinearity (Hair *et al.*, 2006). However, multicollinearity is examined among more than two predictor variables on the same level. In this study, the predictor variables that were more than two and on the same level were the mediating variables (PCD, EPI, and EPF), as well as predicting the criterion variable (EI). Hence, in order to examine if multicollinearity existed among these variables, each of the variable was used at different interpolations as dependent variable. From the examination of collinearity, none of the tolerance value was below 0.10 and all the variance inflation factor (VIF) values had been less than 10. Thus, for this study, multicollinearity was not a problem. Table 4.4 shows the tolerance values and the VIF values of the latent constructs at three different computations.

Table 4.4  
*Tolerance and VIF Values of the latent constructs*

Dependent Variable	Latent Constructs	Collinearity Statistics	
		Tolerance	VIF
EPF	Entrepreneurial Passion for Inventing	.619	1.616
	Perceived Creativity Disposition	.619	1.616
EPI	Perceived Creativity Disposition	.757	1.321
	Entrepreneurial Passion for Founding	.757	1.321
PCD	Entrepreneurial Passion for Founding	.584	1.712
	Entrepreneurial Passion for Inventing	.584	1.712

#### 4.5 Sample Characteristics

Table 4.5 presents the frequencies and the percentages of the important characteristics of the sample. The characteristics examined were the gender of the respondents, University of the respondents, and their class levels in the University. The table also indicates the missing values in terms of these characteristics. The responses obtained showed that 60.3% of the respondents were male students, while 38.5% were females, and 1.2% did not respond to the question on gender. As for the University of the Students, 51.9% came from Ahmadu Bello University (ABU), 26.6% from Bayero University Kano (BUK), and 19.7% were students of Usman Danfodio University Sokoto (UDUS). Again, 1.8% did not respond to the University they came from. Also, among the respondents were 300 level students constituting 46.9%, students in their 400 level were 47.6%, and those in 500 level were 5.2%, while 2 students representing 0.3% did not respond to the question about their level of class.

Table 4.5  
*Sample Characteristics*

		<b>Frequency</b>	<b>Percentage</b>
Gender	Male	359	60.3
	Female	229	38.5
	Missing	7	1.2
University	Ahmadu Bello University (ABU), Zaria	309	51.9
	Bayero University Kano (BUK), Kano	158	26.6
	Usman Danfodio University Sokoto (UDUS), Sokoto	117	19.7
	Missing	11	1.8
Level	300 level	279	46.9
	400 level	283	47.6
	500 level	31	5.2
	Missing	2	0.3

#### 4.6 Descriptive Statistics of the Study Variables

The mean and the standard deviation of the variables in this study were computed and the results are presented in Table 4.6. The scale of measurement for the variables had been a 7-point Likert scale anchored on different degrees of agreements. From the table, except for the perception of University support that had a mean of 4.989, the mean for all other variables had been slightly above 5.0, with the highest (entrepreneurial passion for founding) mean of 5.611. This suggested that on average, the scores to the questions on the variables of the study were considerable higher on the scale, agreeing mostly with the questions.

Table 4.6  
*Descriptive Statistics*

<b>Construct</b>	<b>Mean</b>	<b>Std. Deviation</b>
Entrepreneurial Intention	5.498	1.398
Entrepreneurial Passion for Founding	5.611	1.135
Entrepreneurial Passion for Inventing	5.366	1.163
Perceived Creativity Disposition	5.195	1.107
Perceived Effective Entrepreneurship Education	5.373	1.116
Perception of University Support	4.989	1.277

#### **4.7 Common Method Variance**

Common method variance is defined as a “systematic error variance shared among variables measured with and introduced as a function of the same method and/or source” (Richardson, Simmering, & Sturman, 2009). This means that if two or more variables are assessed using the same method, they will share variance that resides in the common method used, resulting in common method variance (also referred to as monomethod bias or same source bias) (Spector & Brannick, 2010). Common method variance is assumed to have effect in the relationship between variable by either inflating or attenuating the relationships (Williams & Brown, 1994).

It is, therefore, mostly agreed that the common method variance, which is attributed to the measurement method, posed problem in the field of behavioural research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). It is particularly present and strong in behavioural research because most behavioural studies are carried out in a condition where data for the predictor and criterion variables are obtained from the same individual in the same

measurement context using the same item context and similar item characteristics (Podsakoff *et al.*, 2003).

Moreover, to account for CMV method biases, Podsakoff *et al.*, (2003) have suggested two major ways to control for method biases; the design of the study procedures and/or statistical controls. Following these suggestions, two approaches (each one from the study design procedures and the statistical controls) were employed in this study to reduce or eliminate and also to control the presence of common method bias. Furthermore, in order to reduce common method variance, the items measuring the variables in this study were carefully examined and had no question that is complex or ambiguous and it does not contain abstract words (Podsakoff *et al.*, 2003). The study followed the recommendation that items developed for a study should be clear, concise, and specific as possible to measure the constructs they are intended to measure (Tourangeau, Rips, & Rasinski, 2000). In addition, measuring construct in one study with similar scale format and anchor is said to be a likely reason for some covariations observed among constructs (Podsakoff *et al.*, 2003). This is further clarified by Tourangeau *et al.*, (2000) that scale format and anchors can systematically influence responses. Although this study used similar scale format of Likert-scale, the scale anchor was not similar across all constructs. Hence, the study had placed the necessary control measures for the occurrence of common method variance prior to data collection process.

In addition to the initial procedure for controlling common method variance prior to data collection, the study also employed one of the most widely used statistical techniques to

control common method bias; the Harman's single-factor test. Podsakoff *et al.*, (2003), have described the process of Harman's one-factor (or single-factor) test as; loading of all variables of a study into exploratory factor analysis, and then, examining the un-rotated factor solution to identify the number of factors that explain the variance in the variables. To determine the presence of common method variance; one factor will emerge from the factor analysis or one particular factor will explain the majority of the covariance among the measures. However, some researchers have used the Harman's single-factor test, but instead, the confirmatory factor analysis (CFA) was considered to determine if one factor would account for the majority of variance in the variables (Korsgaard & Roberson, 1995; Mossholder, Bennett, Kemery, & Wesolowski, 1998; Iverson & Maguire, 2000).

Following these procedures, a principal component factor analysis was performed and it was observed that no single factor accounted for the majority of variance in the variables. The factor with the highest variance accounted for 29% of variance. Hence, this study did not illustrate any sign that indicated the presence of common method variance.

## 4.8 Assessment of Measurement Model (PLS-SEM)

### 4.8.1 Introduction

The following section depicts the measurement model and the structural model by using Partial Least Squares Structural Equation Modelling (PLS-SEM). The application of PLS-SEM in this study came with several advantages, as stated by Hair *et al.*, (2014); PLS-SEM accepts and works very well with small number and does not make assumptions about the underlying data, it can easily run data measured by both reflective and formative items, it can also handle single-item constructs, and shows no identification problems. Additionally, PLS-SEM is known to be highly efficient in estimating parameters, which results in the outcome of high statistical power than the CB-SEM (Hair *et al.*, 2014), which made the application of PLS-SEM favourable to researchers in various research situations.

This study, therefore, benefited from these advantages majorly due to the presence of second order formative constructs; the entrepreneurial passion for inventing and the entrepreneurial passion for founding. The study also had a single-item that was measured one each of the dimensional constructs of the entrepreneurial passion for inventing and the entrepreneurial passion for founding. Based on these rationales, this study considered PLS-SEM to be more ideal as a statistical technique for use over the others like the Covariance Based Structural Equation Modelling (CB-SEM), and hence, was employed for the assessment of the measurement model and the evaluation of the structural model.



This study used the sequential two-stage approach to assess the results (Hair *et al.*, 2014). Henseler *et al.*, (2009) and Hair *et al.*, (2014) explained that in the PLS-SEM analysis, the estimation of the outer model (i.e. measurement model) is first examined, checking the internal consistency reliability (i.e. composite reliability), convergent validity, and discriminant validity. For the formative measurement models, the concepts of reliability (i.e. internal consistency) and construct validity (i.e. convergent and discriminant validity) are not meaningful (Bagozzi, 1994; Bollen, 2014), as reliability is not relevant as a criterion for assessing measurement quality in a formative measurement model (Diamantopoulos, 2006). However, the measurement model for a formative measured construct has certain criteria for its assessment. The formative measures of this study were assessed based on their convergent validity, the outer weight, as well as the significance and the collinearity among the indicators (Wong, 2013; Hair *et al.*, 2014). Meanwhile, for the single-item construct, the assessment of measurement model was not applicable (Hair *et al.*, 2014).

After establishing the reliability and the validity of the constructs, the structural model estimates were evaluated. The structural model (inner model) evaluation determined the predictive ability of the model. Hence, the evaluation criteria involving PLS-SEM had been the coefficient of determination ( $R^2$  values) and the significance level of path coefficients (Wong, 2013; Hair *et al.*, 2014). Table 4.7 shows in summary the two-stage approach in evaluating PLS-SEM Results.

Table 4.7  
*Systematic Evaluation of PLS-SEM Results*

Evaluation of the Measurement Models	
Reflective Measurement Models	Formative Measurement Models
<ul style="list-style-type: none"> <li>• Internal consistency (composite reliability)</li> <li>• Indicator reliability</li> <li>• Convergent validity (average variance extracted )</li> <li>• Discriminant validity</li> </ul>	<ul style="list-style-type: none"> <li>• Convergent validity</li> <li>• Collinearity among indicators</li> <li>• Significance and relevance of outer weights</li> </ul>
Evaluation of the Structural Model	
<ul style="list-style-type: none"> <li>• Coefficients of determination (<math>R^2</math>)</li> <li>• Predictive relevance (<math>Q^2</math>)</li> <li>• Size and significance of path coefficients</li> <li>• <math>f^2</math> effect sizes</li> <li>• <math>q^2</math> effect sizes</li> </ul>	

Source: Hair *et al.*, (2014)

#### 4.8.2 Reliability and Validity Assessments

Traditionally, Cronbach's alpha is used in social science research to measure internal consistency, whereas in PLS-SEM, it provides a conservative measure (Wong, 2013; Hair *et al.*, 2014). Hence, another internal consistency measure, the composite reliability has been suggested (Bagozzi & Yi, 1988; Hair *et al.*, 2014). Therefore, the internal consistency reliability is assessed by observing the composite reliability values, as stated by Hair *et al.*, (2014), should be greater than 0.70. The indicator reliability was

considered by examining the outer factor loadings and should exceed 0.70 (Henseler *et al.*, 2009; Hair *et al.*, 2014).

On the other hand, convergent validity is the extent of positive correlation among measures of the same construct, such that, the indicators of a construct converge or share a high proportion of variance (Hair *et al.*, 2014). To establish convergent validity, researchers consider the outer loadings of the indicators, as well as the average variance extracted (AVE). To test for convergent validity, the outer loadings are considered, as well as the average variance extracted (AVE) (Hair *et al.*, 2014). The AVE is “the grand mean value of the squared loadings of the indicators associated with the construct” (Hair *et al.*, 2014:103) and should be 0.50 or higher to be acceptable (Bagozzi & Yi, 1988). When this is achieved, it shows that the construct explains more than half of the variance of its indicators (Hair *et al.*, 2014).

Meanwhile, discriminant validity is the extent to which a construct in a model is practically different from other constructs. Thus, discriminant validity is established when a construct is unique in its complete sense from other constructs in a model (Hair *et al.*, 2014). To measure discriminant validity in PLS-SEM, two measures were carried out.

One of the methods for assessing discriminant validity is the examination of the cross loadings of the indicators. To establish discriminant validity, an indicator's outer loading on its construct should be greater than all of its loadings on other constructs (Henseler *et*

*al.*, 2009; Hair *et al.*, 2014). The other method, and a more conservative way of assessing discriminant validity is the Fornell and Larcker (1981) criterion. In this regard, the square root of the AVE values is compared with the latent variable correlations. It is required that the square root of each construct's AVE should be greater than its highest correlation with any other construct (Hair *et al.*, 2014). This is to clearly show that a construct shares more variance with its indicators than any other construct in the model (Hair *et al.*, 2014). Table 4.8 shows the reliability and the validity thresholds applied in this study.

Table 4.8  
*Determining Reliability and Validity*

<b>Reliability and Validity</b>	<b>Threshold</b>
Indicator Reliability	0.70 or higher is preferred (Hulland, 1999; Hair <i>et al.</i> , 2014)
Internal consistency Reliability	The composite reliability should be equal or greater than 0.70 (Bagozzi & Yi, 1988)
Convergent Validity	The value should be 0.5 or higher (Bagozzi & Yi, 1988)
Discriminant Validity	As suggested by Fornell and Larcker (1981), the square root of AVE of each latent variable should be greater than the correlations among the latent variable

Source: Wong (2013)

### 4.8.3 Results of Reliability and Validity Assessments

The results of the reliability and the validity using the SmartPLS 2.0 software package (Ringle *et al.*, 2005) are presented in the following section. The composite reliability values for all the latent variables examined showed that they are all above the suggested threshold of 0.70 (Ringle, 2006; Henseler *et al.*, 2009; Hair *et al.*, 2014). Specifically, as shown in Table 4.9, the values for the reflective multiple-items latent variables ranged from 0.859 to 0.941, thus, indicating higher levels of reliability (Hair *et al.*, 2014).

Following the composite reliability, the outer loadings were also examined for the indicators' reliability. The results showed that all loading values exceeded the suggested threshold value of 0.70 (Ringle, 2006; Henseler *et al.*, 2009; Hair *et al.*, 2014), as all loadings ranged from 0.705 to 0.913. This means that each construct in the model has captured indicators that have much in common and they are statistically significant (Hair *et al.*, 2014). Again, when the standardized outer loadings were squared, as suggested by Hair *et al.* (2014) the values were 0.5 and above. The square of the standardized indicator's outer loading showed how much variation in an item is explained by its construct and this variance in an item is explained, as a rule of thumb, should be at least 0.50 (Hair *et al.*, 2014). Hence, in this study, the reliability of the indicators had been assumed (Wong, 2013; Hair *et al.*, 2014). Table 4.9 indicates the loadings of the items in the study model.

Next is the assessment of convergent validity, whereby the Average Variance Extracted (AVE) values were examined. All the AVE values in the results exceeded the threshold value of 0.50 (Ringle, 2006; Henseler *et al.*, 2009; Hair *et al.*, 2014). The least value was 0.549, and hence, convergent validity was established. The AVE values are also shown in Table 4.9.



Table 4.9

*Item loading, internal consistency, and average variance extracted for the first-order constructs*

<b>Construct</b>	<b>Indicators</b>	<b>Loadings</b>	<b>Composite Reliability</b>	<b>AVE</b>
Entrepreneurial Intention	EI2	.777	.941	.762
	EI3	.898		
	EI4	.913		
	EI5	.895		
	EI6	.872		
	Identity Centrality for Founding	ICF		
Identity Centrality for Inventing	ICI	1.000	1.000	1.000
Intense Positive Feeling for Founding	IPFF1	.825	.866	.682
	IPFF2	.852		
	IPFF3	.801		
Intense Positive Feeling for Inventing	IPFI1	.815	.898	.688
	IPFI2	.835		
	IPFI3	.851		
	IPFI4	.816		
	IPFI5	.816		
Perceived Creativity Disposition	PCD2	.746	.904	.575
	PCD3	.749		
	PCD4	.754		
	PCD5	.752		
	PCD6	.795		
	PCD7	.788		
	PCD8	.720		
	PCD9	.720		
Perceived Effective Entrepreneurship Education	PEEE1	.785	.891	.621
	PEEE2	.806		
	PEEE3	.804		
	PEEE4	.750		
	PEEE5	.793		
Perception of University Support	PUS4	.705	.859	.549
	PUS5	.751		
	PUS6	.727		
	PUS7	.781		
	PUS8	.738		

AVE = average variance extracted

Following the convergent validity establishment is the discriminant validity. The discriminant validity was assessed based on Fornell and Larcker's (1981) criterion. The results of this study showed that the square root of AVE values for all constructs exceeded other construct values as they correlated with a latent variable correlation. Therefore, the discriminant validity construct wise had been established (Henseler *et al.*, 2009; Hair *et al.*, 2014). Table 4.10 shows the results of the Fornell and Larcker's (1981) criterion for assessing discriminant validity.

Table 4.10  
*Square Root of AVE and correlations of latent variables for the first-order constructs*

<b>Construct</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1) Entrepreneurial Intention	<b>.873</b>							
2) Identity Centrality for Founding	.446	<b>Single Item</b>						
3) Identity Centrality for Inventing	.426	.407	<b>Single Item</b>					
4) Intense positive feelings for founding	.528	.623	.450	<b>.826</b>				
5) Intense positive feelings for Inventing	.532	.492	.603	.620	<b>.829</b>			
6) Perceived Creativity Disposition	.443	.388	.492	.479	.597	<b>.758</b>		
7) Perceived Effective Entrepreneurship Education	.244	.348	.382	.388	.517	.503	<b>.788</b>	
8) Perception of University Support	.503	.305	.412	.336	.456	.430	.325	<b>.741</b>

Note: Diagonal elements (figures in bold) are the square root of the variance (AVE) shared between the constructs and their measures. Off diagonal elements are the correlations among constructs.

Next, in order to assess discriminant validity based on the indicator level, the cross-loadings were examined (Henseler *et al.*, 2009). This study found that the loading of each



of the indicator had been higher on its associated factor than any of its cross-loadings in other factors. This result is presented in Table 4.11. Again, this established the discriminant validity at the level of indicators.



Table 4.11

*Measurement items loading and cross-loading for the first-order constructs*

<b>Construct</b>	<b>Indicators</b>	<b>EI</b>	<b>ICF</b>	<b>ICI</b>	<b>IPFF</b>	<b>IPFI</b>	<b>PCD</b>	<b>PEEE</b>	<b>PUS</b>
Entrepreneurial Intention	EI2	<b>.777</b>	.343	.335	.394	.416	.344	.206	.391
	EI3	<b>.898</b>	.384	.406	.481	.512	.428	.227	.465
	EI4	<b>.913</b>	.412	.380	.459	.456	.397	.203	.457
	EI5	<b>.895</b>	.381	.381	.483	.483	.386	.222	.466
	EI6	<b>.872</b>	.426	.352	.481	.449	.374	.207	.410
Identity Centrality for Founding	ICF	.446	<b>1.000</b>	.407	.623	.492	.388	.348	.305
Identity Centrality for Inventing	ICI	.426	.407	<b>1.000</b>	.450	.603	.492	.382	.412
Intense Positive Feeling for Founding	IPFF1	.387	.431	.301	<b>.825</b>	.475	.351	.305	.239
	IPFF2	.486	.575	.417	<b>.852</b>	.535	.420	.336	.280
	IPFF3	.433	.531	.392	<b>.801</b>	.524	.415	.321	.312
Intense Positive Feeling for Inventing	IPFI1	.405	.394	.412	.518	<b>.815</b>	.466	.451	.286
	IPFI2	.421	.405	.473	.532	<b>.835</b>	.491	.407	.392
	IPFI3	.435	.426	.547	.502	<b>.851</b>	.522	.465	.418
	IPFI4	.503	.406	.564	.506	<b>.816</b>	.500	.393	.411
Perceived Creativity Disposition	PCD2	.312	.311	.330	.357	.435	<b>.746</b>	.391	.280
	PCD3	.333	.303	.362	.366	.447	<b>.749</b>	.413	.313
	PCD4	.305	.289	.350	.328	.424	<b>.754</b>	.377	.319
	PCD5	.283	.276	.360	.314	.408	<b>.752</b>	.411	.315
	PCD6	.375	.266	.401	.400	.509	<b>.795</b>	.370	.346
	PCD7	.425	.311	.439	.384	.503	<b>.788</b>	.356	.390
	PCD8	.301	.304	.356	.392	.432	<b>.720</b>	.353	.309
	PCD9	.312	.311	.330	.357	.435	<b>.746</b>	.391	.280
Perceived Effective Entrepreneurship Education	PEEE1	.252	.224	.331	.292	.455	.363	<b>.785</b>	.282
	PEEE2	.270	.346	.321	.411	.469	.399	<b>.806</b>	.293
	PEEE3	.164	.263	.270	.298	.381	.378	<b>.804</b>	.251
	PEEE4	.133	.237	.267	.245	.353	.424	<b>.750</b>	.216
	PEEE5	.120	.289	.308	.262	.362	.420	<b>.793</b>	.227
Perception of University Support	PUS4	.258	.160	.275	.129	.275	.321	.260	<b>.705</b>
	PUS5	.357	.248	.296	.209	.340	.323	.273	<b>.751</b>
	PUS6	.478	.263	.368	.352	.395	.345	.262	<b>.727</b>
	PUS7	.379	.214	.285	.201	.302	.305	.205	<b>.781</b>
	PUS8	.350	.226	.282	.306	.349	.291	.200	<b>.738</b>

#### 4.8.4 Assessing Second Order Formative Measurement Model

Since the entrepreneurial passion for inventing (EPI) and entrepreneurial passion for founding (EPF) were operationalized as formative constructs; internal consistency, average variance extracted, and validity as in the reflective constructs were not considered (Bagozzi, 1994; Bollen, 2014). As pointed out earlier, the measurement model for the formative measured construct has certain criteria for its assessment. For the formative measures, therefore, the outer weight and significance, as well as collinearity among indicators were examined (Hair *et al.*, 2014; Wong, 2013). The significance of item weights indicates that an indicator explains a significant portion of the variance in the formative construct. The collinearity is determined by assessing the degree of multicollinearity among the formative measures (Diamantopoulos & Winklhofer, 2001), by examining the variance inflation factor (VIF) or the tolerance values (Henseler *et al.*, 2009). This indicates if the formative indicators are highly correlated.

The variance inflation factor (VIF) statistics was used to determine if the formative indicators are highly correlated. As a rule of thumb, multicollinearity is of concern if the VIF is higher than 5 (Hair *et al.*, 2014). However, for formative measures, the VIF values greater than 3.3 indicate high multicollinearity (Diamantopoulos & Sigauw, 2006). Moreover, Table 4.12 portrays that the weights for the formative constructs of EPI and EPF were significant with their associated t values. Also, in this study, the VIF values for the formative indicators of IPFI, ICI, IPFF, and ICF were below the threshold of 3.3. Hence, the VIF for the constructs indicated the absence of multicollinearity, thus,

collinearity was not an issue for the estimation of the PLS path model in this study (Hair *et al.*, 2014). Again, the relevant indicators' weights and associated t values exhibited evidence of construct validity (Petter *et al.*, 2007).

Table 4.12  
*Formative indicators' weights, significance, and test of multicollinearity*

Construct	Indicators	Weights	T Stat.	P Value	Collinearity Statistics	
					Tolerance	VIF
<b>Entrepreneurial Passion for Inventing</b>	Intense Positive Feeling for Inventing	.841	90.389	.000	.479	2.088
	Identity Centrality for Inventing	.235	31.221	.000	.618	1.618
	Intense Positive Feeling for Founding	.774	73.150	.000	.481	2.078
<b>Entrepreneurial Passion for Founding</b>	Identity Centrality for Founding	.314	35.995	.000	.586	1.706

\*\*\*: P<0.001

Having established satisfactory outer model (measurement model) with evidence of adequate reliability and validity of the reflective indicators and constructs, as well as, the adequacy of the formative indicators and constructs, the next section evaluates the inner model (structural model).

## 4.9 Assessment of Structural Model (PLS-SEM)

### 4.9.1 Introduction

This section evaluates the structural model. The major considerations for the assessment of the inner model were path coefficient estimates, coefficient of determination ( $R^2$  values),  $f^2$  effect sizes, and predictive relevance ( $Q^2$ ) (Ringle, 2006; Henseler *et al.*, 2009; Hair, Ringle, & Sarstedt, 2011; Hair *et al.*, 2014). Besides, some thresholds, as indicated in Table 4.13, had been considered.

Table 4.13

*Measures and Threshold Values for Assessment of Inner Model*

Assessment Subject	Measure	Threshold Value
Path Coefficient	t-value	1.65 ( $p < 0.10$ ), 1.96 ( $p < 0.05$ ), 2.58 ( $p < 0.01$ )
Coefficient of Determination	$R^2$	0.19 (weak), 0.33 (mediocre), 0.67 (good)
Effect sizes	$f^2$	0.02(weak), 0.15(moderate) and 0.35(strong)
Predictive Relevance	$Q^2$	0.02 (small), 0.15 (medium), 0.35 (strong)

Note: Based on Cohen (1988), Chin (1998), Henseler *et al.*, (2009) and Hair *et al.*, (2011; 2014).

### 4.9.2 Results from Assessment of Structural Model

In this section, the part coefficients were estimated through bootstrapping procedure in SmartPLS 2.0 (Ringle *et al.*, 2005). As suggested by Hair *et al.*, (2014), the number of bootstrapping subsamples was set at 5,000 with 595 bootstrap cases in the data set and a no sign change. The parameters were also estimated based on a path-weighting scheme

(Vinzi, Trinchera, & Amato, 2010). The bootstrapping procedure was carried out to obtain standard errors to determine the significance of the coefficients and for the test of hypotheses (Hair *et al.*, 2014).

On a significance level of  $p < 0.01$ , the results showed that all path coefficients from the predictors to the criterion variables were all positively significant. The exception was the path coefficient from PEEE to EI, which was negatively significant ( $\beta = -0.130$ ). However, on a single or an individual relationship between PEEE and EI, the path coefficient was positively significant ( $\beta = 0.262$ ). Table 4.14 presents the path coefficients, t-values, and p-values. The validated structural model is also presented in Figure 4.2.

Table 4.14  
*Results of Path Coefficients*

Hypothesis	Hypothesis Path	Path Coefficient	Standard Error	T Value	P Value
H1 (+)	EPF -> EI	.326	.055	5.930	.000*
H2 (+)	EPI -> EI	.308	.053	5.809	.000*
H3 (+)	PCD -> EI	.157	.047	3.322	.000*
H4 (+)	PEEE -> EI	-.130	.044	2.970	.002
H5 (+)	PEEE -> EPF	.329	.043	7.695	.000*
H6 (+)	PEEE -> EPI	.411	.043	9.631	.000*
H7 (+)	PEEE -> PCD	.406	.044	9.197	.000*

\*: Significant at  $P < 0.01$

Next is the examination of the coefficient of determination ( $R^2$ ) of the endogenous latent variables (Henseler *et al.*, 2009). Based on the threshold of acceptable values of  $R^2$ , as proposed by Chin (1998), 0.19, 0.33, and 0.67 indicated weak, moderate, and good

respectively. The results obtained showed that the  $R^2$  for the endogenous latent variables were 0.39, 0.33, 0.38, and 0.22 for EI, PCD, EPI, and EPF respectively. This indicated that according to Chin (1998), the coefficients of determinations ( $R^2$ ) in this study were all moderate, except for EPF, which was weak. Overall, the  $R^2$  values obtained showed good predictive power of the exogenous latent variables on the endogenous latent variables. In other words, the amount of variance in the endogenous constructs, explained by the exogenous constructs, had been adequate. The following table (Table 4.15) shows the coefficient of determination ( $R^2$  values).

Table 4.15  
*Coefficients of Determination ( $R^2$ )*

<b>Construct</b>	<b>R Square (<math>R^2</math>)</b>
EI	.386
EPF	.223
EPI	.382
PCD	.332

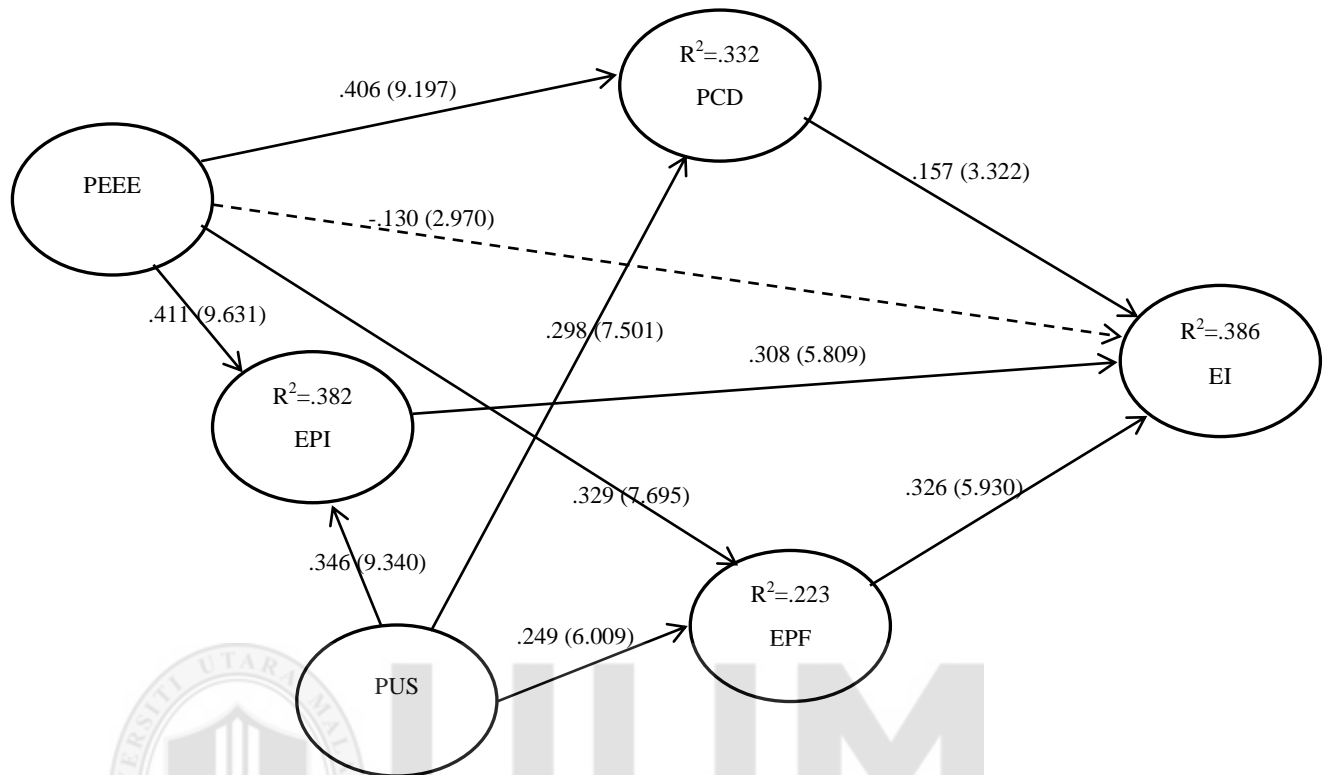


Figure 4.2  
Validated Structural Model

Values indicate path coefficients; values in parentheses indicate *t*-values; solid lines indicate significant relationships ( $p < 0.01$ ); Dotted line indicates significant, but negative relationship ( $p < 0.01$ ).

In addition to determining the  $R^2$  values of all endogenous constructs, is the  $f^2$  effect size. The effect size of a construct that is exogenous is determined when the construct is omitted from a model to determine its impact on the endogenous construct by means of the change in the  $R^2$  value (Hair *et al.*, 2014). The effect size values represent different levels of impact, which were 0.02, 0.15, and 0.35 that represented small, medium, and large effects of the exogenous latent variables respectively (Cohen, 1988). Hence, in this study, the exogenous construct PEEE explained the endogenous latent variables PCD, EPI, and EPF with the effect sizes of 0.220, 0.246, and 0.125 respectively (see Table



5.16). These showed that the effect sizes, according to Cohen (1988), had been medium for PCD and EPI, but small for EPF. Again, the exogenous constructs PEEE, PCD, EPI, and EPF had the effect size values of 0.018, 0.023, 0.068, and 0.098 respectively (see also Table 4.16). Therefore, the effect sizes of all these constructs on the endogenous construct EI had been small.

Table 4.16  
*f*<sup>2</sup> Effect Size

<b>Endogenous</b>	<b>exogenous</b>	<b>R<sup>2</sup> Included</b>	<b>R<sup>2</sup> Excluded</b>	<b>f<sup>2</sup></b>	<b>Effect size</b>
<b>EI</b>	PCD	.386	.372	.023	Small
	PEEE	.386	.375	.018	Small
	EPI	.386	.344	.068	Small
	EPF	.386	.326	.098	Small
<b>PCD</b>	PEEE	.332	.185	.220	Medium
<b>EPI</b>	PEEE	.382	.230	.246	Medium
<b>EPF</b>	PEEE	.223	.126	.125	Small

Lastly, predictive relevance was also examined as an assessment of the structural model, in addition to evaluating the magnitude of the R<sup>2</sup> values. The predictive relevance was measured by the Stone-Geisser criterion Q<sup>2</sup> value, obtained using the blindfolding procedure (Henseler *et al.*, 2009; Hair *et al.*, 2014). Blindfolding is an iterative process where each data point is omitted based on a certain omission distance and this process is continued until completed and the model has been re-estimated (Hair *et al.*, 2014). Hair *et al.*, (2014), however, suggested that the omission distance chosen (between 5 and 10) divided by the number of cases should not be an integer. In PLS-SEM, when predictive relevance is determined, it shows that the data points of indicators in reflective measurement models of endogenous constructs and endogenous single-item constructs

are accurately predicted (Hair *et al.*, 2014). This procedure, as indicated by Hair *et al.*, (2014), does not apply to formative endogenous constructs.  $Q^2$  value greater than zero in a structural model for a certain reflective endogenous latent variable shows the path model's predictive relevance for the particular construct (Chin, 2010; Hair *et al.*, 2014).

Table 4.17 shows the measure of the predictive relevance of the reflective endogenous latent variables in the study model. This is represented by the  $Q^2$  values obtained by running a blindfolding procedure with an omission distance of 7 based on 595 cases. Using the cross-validated redundancy approach, as recommended by Hair *et al.*, (2014), the two reflective endogenous constructs had proven a predictive relevance as their values of  $Q^2$  had been above zero. Specifically, the  $Q^2$  values were 0.373 and 0.359 for EI and PCD, respectively. However, the predictive relevance of EPI and EPF had not been measured because they were formative endogenous latent variables.

Table 4.17  
*Predictive Relevance ( $Q^2$ ) Values*

<b>Total</b>	<b>SSO</b>	<b>SSE</b>	<b>1-SSE/SSO</b>
EI	595	373.3761	.373
PCD	595	381.2655	.359

#### **4.9.3 Results of Hypotheses Testing**

Based on the results of the test of hypotheses in Table 4.18, the following are presented. The result of Hypothesis 1 (H1) showed that no positive significant relationship existed between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial

Intention (EI) in the overall model as the path coefficient was negative ( $\beta = -0.130$   $t = 2.970$ ). With regard to H2, there was a significant positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Perceived Creativity Disposition (PCD) ( $t = 9.197$ ;  $p < 0.001$ ). As for H3, the results showed a significant positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial Passion for Inventing (EPI) ( $t = 9.631$ ;  $p < 0.001$ ). Similarly, results regarding H4 showed a significant positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial Passion for Founding (EPF) ( $t = 7.695$ ;  $p < 0.001$ ). Meanwhile, for H5, there was a significant positive relationship between Perceived Creativity Disposition (PCD) and Entrepreneurial Intention (EI) ( $t = 3.322$ ;  $p < 0.001$ ). Likewise, results regarding H6 showed a significant positive relationship between Entrepreneurial Passion for Inventing (EPI) and Entrepreneurial Intention (EI) ( $t = 5.809$ ;  $p < 0.001$ ). With regard to H7, the results showed that there was a significant positive relationship between Entrepreneurial Passion for Founding (EPF) and Entrepreneurial Intention (EI) ( $t = 5.930$ ;  $p < 0.001$ ).

Next, for H8 to H10, the results showed evidence for a mediating effect of Perceived Creativity Disposition (PCD), Entrepreneurial Passion for Inventing (EPI), and Entrepreneurial Passion for Founding (EPF) on the positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial Intention (EI), ( $t = 3.187$ ;  $p < 0.01$ ), ( $t = 4.869$ ;  $p < 0.001$ ), and ( $t = 4.469$ ;  $p < 0.001$ ), respectively. Next, for H11, the study found Perception of University Support (PUS) to moderate the positive relationship between Perceived Effective Entrepreneurship Education (PEEE)

and Perceived Creativity Disposition (PCD) ( $t = 3.838$ ;  $p < 0.001$ ). Also for H12, Perception of University Support (PUS) moderated the positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial Passion for Inventing (EPI) ( $t = 2.803$ ;  $p < 0.01$ ). However, the result for H13 showed that the Perception of University Support (PUS) did not moderate the positive relationship between Perceived Effective Entrepreneurship Education (PEEE) and Entrepreneurial Passion for founding (EPF) ( $t = 0.958$ ;  $p < 0.01$ ). Consequently, except for H1 and H13, all other hypotheses were supported.

Table 4.18  
*Results of Hypotheses Testing*

Hypothesis	Hypothesis Path	Path Coefficient	Standard Error	T Value	P Value	Decision
H1	EPF -> EI	.326	.055	5.930	.000***	Supported
H2	EPI -> EI	.308	.053	5.809	.000***	Supported
H3	PCD -> EI	.157	.047	3.322	.000***	Supported
H4	PEEE -> EI	-.130	.044	2.970	.002	Not supported
H5	PEEE -> EPF	.329	.043	7.695	.000***	Supported
H6	PEEE -> EPI	.411	.043	9.631	.000***	Supported
H7	PEEE -> PCD	.406	.044	9.197	.000***	Supported
H8	PEEE -> PCD -> EI	.064	.020	3.187	.002**	Supported
H9	PEEE -> EPF -> EI	.107	.024	4.469	.000***	Supported
H10	PEEE -> EPI -> EI	.127	.026	4.869	.000***	Supported
H11	PEEE * PUS -> EPF	.049	.051	.958	.169	Not supported
H12	PEEE * PUS -> PCD	.188	.049	3.838	.000***	Supported
H13	PEEE * PUS -> EPI	.132	.047	2.803	.003**	Supported

\*\*\*:  $P < 0.001$ ; \*\*:  $P < 0.01$

#### **4.9.4 Test of Mediating Effects**

Two important tests were used to examine the mediations of PCD, EPI, and EPF for the relationship between PEEE and EI (tests of hypotheses 8, 9, and 10). In the first instance and following the competing model analysis procedure, as suggested by Singh, Goolsby, and Rhoads (1994), this study tested separate mediation models. This method has also been applied in many entrepreneurship researches (De Clercq & Rangarajan, 2008; Bacq, Janssen, & Kickul, 2012). In the second instance, also following Preacher and Hayes' (2008), the study tested the multiple mediator models as a whole. This was achieved by the bootstrapping resampling procedure in PLS, and then, the significance of the indirect effects was observed. The bootstrapping effect was justified to be superior to other alternative procedures in testing the indirect effects, i.e. Sobel test (MacKinnon, Lockwood, & Williams, 2004), which also worked very well with large samples greater than 200 (Bacq *et al.*, 2012). Due to the bootstrapping advantage of no distributional assumptions, the indirect effects can be non-normally distributed (Bacq *et al.*, 2012).

##### **5.9.4.1 Test of Separate Mediating Effects: the Competing Models Analysis**

In the competing model analysis, the estimation and the comparison of two models were carried out (Singh *et al.*, 1994). The first model (known as model 1) showed only the direct effect of Perceived Effective Entrepreneurship Education (PEEE) on Entrepreneurial Intention (EI) in the absence of the mediating variables (PCD, EPI, and EPF). Meanwhile, the second model, known as partial mediations model (model 2),

included all the mediators and showed (a) the relationship in the direct effect model, (b) the direct effects of PEEE on PCD, EPI, and EPF, and (c) the direct effects of PCD, EPI, and EPF on EI. In order to support the hypothesized full mediation by PCD, EPI and EPF, the following conditions, as suggested by Singh *et al.*, (1994), have to be met:

- (1) The variances of the dependent variable explained for the partial mediation model compared to the direct effects model, which should be higher;
- (2) Insignificant effects of Perceived Effective Entrepreneurship Education (PEEE) on Entrepreneurial Intention (EI) in the presence of mediators;
- (3) A significant effect of Perceived Effective Entrepreneurship Education (PEEE) on Perceived Creativity Disposition (PCD), Entrepreneurial Passion for Inventing (EPI), and Entrepreneurial Passion for founding (EPF); and
- (4) A significant effect of Perceived Creativity Disposition (PCD), Entrepreneurial Passion for Inventing (EPI), and Entrepreneurial Passion for founding (EPF) on Entrepreneurial Intention (EI).

Table 4.19 illustrates that the variance in Entrepreneurial Intention (EI) in the partial mediation model (model 2) had been higher than the variance explained in model 1 of the direct relationship. As for the direct relationship between PEEE and EI, the positive and significant relationships between the two constructs in direct effect model (model 1) no longer existed in the partial mediation model (model 2). Hence, the study found support for hypotheses 8, 9, and 10, suggesting that there had been a complete mediation of PCD, EPI, and EPF for the relationship between PEEE and EI.

Furthermore, for the other relationship, satisfying the condition for full mediation of PCD, EPI and EPF, the study also found all direct relationships between PEEE on one hand, and PCD, EPI, and EPF on the other, to be significant. Likewise, the direct relationships between the three mediating variables (PCD, EPI, and EPF) and the dependent variable (EI) were also found to be significant, and hence, satisfying the last condition for a full mediation. Overall, having satisfied all conditions warranted the support of full mediation (Singh *et al.*, 1994) using competing models, as this study concluded that PCD, EPI, and EPF fully mediated the relationship between PEEE on one hand, and EI on the other hand. Table 4.19 shows the results obtained from the competing models analysis.



Table 4.19  
*Competing Models Analysis*

Relationship between constructs	Direct effects model (Model 1)	Partial mediation model (Model 2)
	Path coefficients	
Hypotheses 1: Perceived Effective Entrepreneurship Education ---> Entrepreneurial Intention	0.262***	-.130
Hypotheses 2: Perceived Effective Entrepreneurship Education ---> Perceived Creativity Disposition		0.406***
Hypotheses 3: Perceived Effective Entrepreneurship Education ---> Entrepreneurial Passion for Inventing		0.411***
Hypotheses 4: Perceived Effective Entrepreneurship Education ---> Entrepreneurial Passion for Founding		0.329***
Hypotheses 5: Perceived Creativity Disposition ---> Entrepreneurial Intention		0.157***
Hypotheses 6: Entrepreneurial Passion for Inventing ---> Entrepreneurial Intention		0.308***
Hypotheses 7: Entrepreneurial Passion for Founding ---> Entrepreneurial Intention		0.326***
	Explained variances	
R-square (explaining Entrepreneurial Intention)	.069	.386

\*\*\*: P<0.001

#### 5.9.4.2 Test of the multiple mediator models: Bootstrapping

This study followed the Preacher and Hayes' (2008) recommendations for testing mediation through indirect effect and using bootstrapping procedure to assess its significance. Therefore, the significance of the indirect effect of PEEE on EI was determined through the multiple mediators of PCD, EPI, and EPF. Using bootstrapping on 5,000 samples with cases of 595 (Henseler *et al.*, 2009), the t-statistics of the indirect effects were computed. Consequently, all the mediating effects were significant, and hence, hypotheses 8, 9, and 10 were supported. The summary of this computation is



shown in Table 4.20. The results also reflect the hypotheses testing, as portrayed in Table 4.18.

Table 4.20  
*Tests of the Multiple Mediator Model*

Hypothesis	Hypothesis Path	Indirect Effect	Std. Error	t-value	p value
H8	PEEE -> PCD -> EI	.064	.020	3.187	.002**
H9	PEEE -> EPF -> EI	.107	.024	4.469	.000***
H10	PEEE -> EPI -> EI	.127	.026	4.869	.000***

\*\*\*: P<0.001; \*\*: P<0.01

#### 4.9.5 Test of Moderating Effects

##### 4.9.5.1 Analysing the Role of the Perception of University Support as a Moderator

In this study, the moderating analysis was performed by employing the PLS product indicator approach (Chin, Marcolin, & Newsted, 2003; Helm, Eggert, & Garnefeld, 2010; Henseler & Fassott, 2010). This approach is especially recommended in order to better estimate and detect the interaction effects involving a continuous predictor and moderator variables. In essence, this approach was used in order to determine the moderating effect of the perception of University support on the relationship between Perceived Effective Entrepreneurship Education (PEEE) and the three constructs of Perceived Creativity Disposition (PCD), Entrepreneurial Passion for Inventing (EPI) and Entrepreneurial Passion for founding (EPF). In the first instance, to test the moderating effect, the moderator indicators (perception of University support) were multiplied with the

predictor indicators (PEEE) to create interaction latent variables that predicted each of PCD, EPI, and EPF.

Again, since two of the criterion latent variables that the interaction constructs predicted were formative constructs, the latent variable scores were used to create the interaction terms (Chin *et al.*, 2003) in the second stage approach (Henseler & Chin, 2010). Hence, the standardized latent variable scores were used as a single indicator for each of the latent variables to create a single interaction term. Having done this, in the second instance, the estimated influence; of the predictor (PEEE) on the three criterion variables (PCD, EPI, and EPF), the moderator (PUS) on the criterion variables, and the interaction constructs (PEEE\*PUS) on the criterion variables, were determined. Consequently, the significant effect of the moderator (PUS) could be determined if the interaction effects (the paths of the interaction constructs to the criterion variables) yield good coefficient values (Chin *et al.*, 2003). Hence, the estimated standardized path coefficients of 0.188, 0.132, and 0.049 were obtained for PEEE\*PUS to PCD, EPI, and EPF respectively. Based on these values and the t-statistics obtained through bootstrapping resampling procedure (Efron & Tibshirani, 1993), the study found the interaction effect to have a significant impact ( $p < 0.001$ ) on PCD and also a significant impact ( $p < 0.01$ ) on EPI. However, the interaction effect was insignificant ( $t = 0.958$ ) on EPF. Therefore, the study found support for hypotheses 11, and 12 (see Table 4.18).

Furthermore, given that the study has found support for H11 and H12, the graph of the interaction was plotted and presented in Figures 4.3 and 4.4. As proposed in the

hypotheses and as shown from the two graphs (Figures 4.3 and 4.4), the impact of the moderating effect of the perception of University support on the relationship between perceived effective entrepreneurship education and perceived creativity disposition on one hand, and entrepreneurial passion for inventing on the other, had been stronger for those groups of students' who perceived the University support to be higher than those who perceived it to be lower.

Additionally, the effect sizes of the moderating effects were also computed and examined. The results showed the effect sizes of 0.12, 0.17, and 0.07 of the moderating variable on PCD, EPI, and EPF, respectively. Following Cohen's (1988) criterion, the effect sizes of 0.02, 0.15, and 0.35 were small, medium, and large respectively, as this study concluded that the effect sizes of the moderator (PUS) was small on PCD, medium on EPI, and small on EPF.

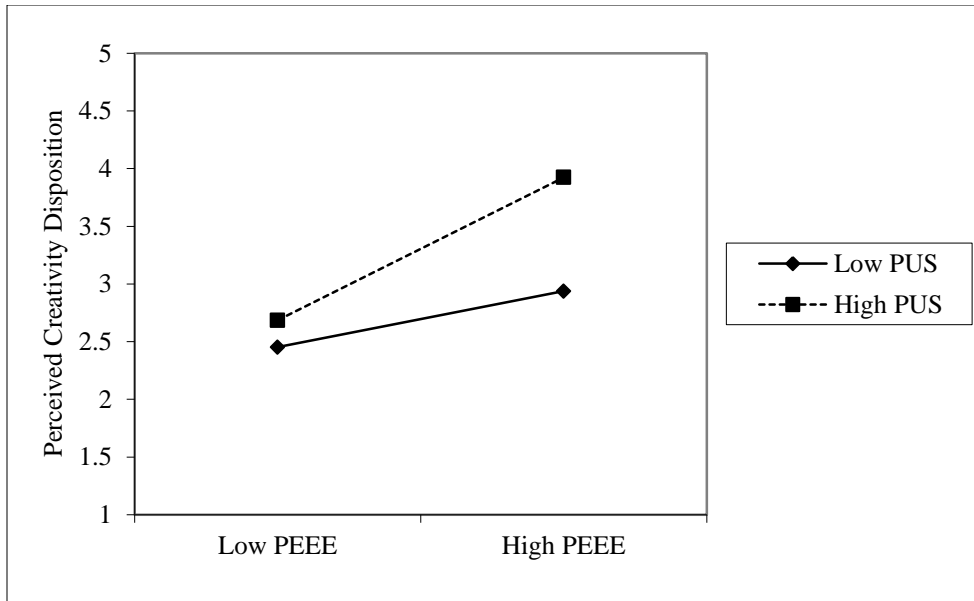


Figure 4.3  
*Interaction effect of perceived effective entrepreneurship education and perception of university support on perceived creativity disposition*

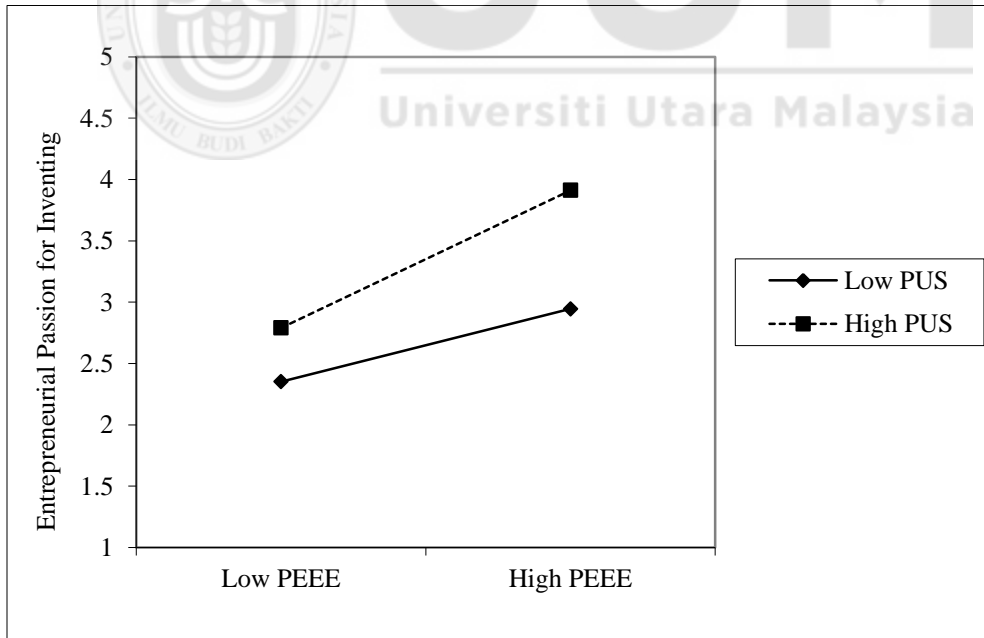


Figure 4.4  
*Interaction effect of perceived effective entrepreneurship education and perception of university support on entrepreneurial passion for inventing*

#### 4.9.6 Summary of Hypotheses

The summary of the overall hypotheses for this study is presented in Table 4.21. The table shows that out of the 13 hypotheses developed for this study, including; main effects, mediating, and moderating hypotheses, 11 hypotheses were supported, while two hypotheses were not supported.

Table 4.21  
*Summary of Hypotheses Testing*

<b>Hypothesis</b>	<b>Hypothesis Statement</b>	<b>Result</b>
H1	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial intention.</i>	<i>Not supported</i>
H2	<i>Perceived effective entrepreneurship education is positively related to perceived creativity disposition.</i>	<i>Supported</i>
H3	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial passion for inventing.</i>	<i>Supported</i>
H4	<i>Perceived effective entrepreneurship education is positively related to entrepreneurial passion for founding.</i>	<i>Supported</i>
H5	<i>Perceived creativity disposition is positively related to entrepreneurial intention.</i>	<i>Supported</i>
H6	<i>Entrepreneurial passion for inventing is positively related to entrepreneurial intention.</i>	<i>Supported</i>
H7	<i>Entrepreneurial passion for founding is positively related to entrepreneurial intention.</i>	<i>Supported</i>
H8	<i>Perceived creativity disposition mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.</i>	<i>Supported</i>

Table 4.21  
*Summary of Hypotheses Testing*

<b>Hypothesis</b>	<b>Hypothesis Statement</b>	<b>Result</b>
H9	<i>Entrepreneurial passion for inventing mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.</i>	<i>Supported</i>
H10	<i>Entrepreneurial passion for founding mediates the relationship between perceived effective entrepreneurship education and entrepreneurial intention.</i>	<i>Supported</i>
H11	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and perceived creativity disposition, such that the relationship is stronger for higher perception of university support.</i>	<i>Supported</i>
H12	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for inventing, such that the relationship is stronger for higher perception of university support.</i>	<i>Supported</i>
H13	<i>Perception of university support moderates the positive relationship between perceived effective entrepreneurship education and entrepreneurial passion for founding, such that the relationship is stronger for higher perception of university support.</i>	<i>Not supported</i>

#### **4.9.7 Power Analysis**

To empirically validate the findings of this study, power analysis (1- $\beta$ ) was conducted. The power of statistical test is defined as the probability of rejecting a null hypothesis ( $H_0$ ) when it is indeed false (Faul, Erdfelder, Lang, & Buchner, 2007); in other words, the probability of obtaining a significant result (Cohen, 1988). This study, therefore, used the G\*Power 3.1.9.2 (Faul *et al.*, 2007) to conduct the ‘post hoc’ power test in order to

estimate the validity of the statistical parameters. A cut-off value of 0.80 and above is set for a valid estimation in behavioural research (Cohen, 1988; Baroudi & Orlikowski, 1989). Based on the sample size of 595, at 0.05 level of significance, and an effect size of 0.02, this study obtained an estimated power of 0.80, which met the minimum acceptance level. Hence, the study can be said to have a confidence of 80% probability of dictating an effect if it did exist (Cohen, 1992). This test, thus, confirmed that the hypotheses supported in this study had been truly significant. Table 4.22 presents the results obtained from G\*Power analysis.

Table 4.22

*G\*Power Analysis*

F tests - Linear multiple regression: Fixed model, R <sup>2</sup> deviation from zero		
Analysis:	Post hoc: Compute achieved power	
Input:	Effect size $f^2$	= 0.02
	$\alpha$ err prob.	= 0.05
	Total sample size	= 595
	Number of predictors	= 4
Output:	Non-centrality parameter $\lambda$	= 11.9
	Critical F	= 2.39
	Numerator df	= 4
	Denominator df	= 590
	Power (1- $\beta$ err prob.)	= 0.80

#### 4.10 Summary

In this chapter, the statistical analysis of quantitative data is presented. In particular, the descriptive statistics of the samples are presented and initial data screening was performed. Next, the measurement model, as well as the structural model, was assessed with PLS-SEM by using the SmartPLS 2.0 (Ringle *et al.*, 2005) software package. Nonetheless, the measurement properties showed adequate reliability and validity of the research model. In addition, the structural model showing the relationships between the constructs revealed support for 11 out of the 13 hypotheses tested in the study. Specifically, the study supported six main hypotheses (H2-H7), three mediating hypotheses (H8 to H10), and two moderating hypotheses (11 and 12) formulated (see Table 4.18). However, the results did not support H1 and H13. Moreover, the findings of this study were further validated by the application of power analysis and the predictive relevance of the model. In the next chapter, the results from quantitative analysis are discussed in detail.



## **CHAPTER FIVE**

### **DISCUSSION AND CONCLUSION**

#### **5.1 Overview**

This chapter discusses the empirical findings of the previous chapter in terms of theoretical significance, methodological rigor, and practical contribution. The chapter briefly presents the entire findings addressing the four research questions of the study proposed in Chapter 1. The chapter also discusses how the results fill the existing knowledge gaps and make significant contributions in the context of entrepreneurship education and entrepreneurial intention research, particularly in developing countries. Specifically, the contributions highlight that the study extends knowledge by reconceptualising entrepreneurial intention theories, validating a model, including hierarchical formative model using partial least squares structural equation modelling (PLS-SEM), as well as providing stakeholders with valid information on entrepreneurship education delivery, and its consequences. The chapter also discusses limitations and future research directions with concluding remarks. Overall, the objective of this chapter is to explain the contributions of the study in terms entrepreneurship education and entrepreneurial intention, especially in the Nigerian higher educational system.

This chapter is designed as in the following: Section 6.2 reviews the research objectives of the study. Section 6.3 briefly presents the research findings addressing the four research questions. Section 6.4 discusses the contributions of the study in terms of theory, method, and practice. Next, the study discusses limitations in section 6.5, and future research directions in section 6.6. Finally, Section 6.7 provides concluding remarks for the entire study.

## **5.2 Research Objectives**

The key objectives of the study had been to determine if perceived effective entrepreneurship education would increase entrepreneurial intention, perceived creativity disposition, and the two domains of entrepreneurial passion (inventing and founding) among Nigerian university students, and to subsequently determine if the students perceived creativity dispositions and entrepreneurial passions in relation to their entrepreneurial intentions. In addition, the study examined the mediating effects of perceived creativity disposition and entrepreneurial passions in the positive relationship between perceived effective entrepreneurship education and entrepreneurial intention, and on the other hand, the moderating role of the perception of university support in the positive relationship between perceived effective entrepreneurship education, as well as perceived creativity disposition and entrepreneurial passions of Nigerian university students. This was done in order to fill the knowledge gap in entrepreneurial intention research.

To pursue the stated objectives, this study utilized intention theories and related literatures from entrepreneurship and psychological researches in order to test the hypothetical relationships among the constructs. This study had been a pioneering work in modelling the mediating relationship of creativity and entrepreneurial passion in entrepreneurship education and entrepreneurial intention research, as well as their overall impact on the outcome construct. The following section discusses the empirical findings that support the theoretical relationships, the nature of the conceptual model, and the relevant hypotheses. The entire discussion addresses the four research questions proposed in Chapter 1 of the study.

### **5.3 Summary of Findings**

This study answered four research questions, which had previously neither been addressed nor answered satisfactorily in the domain of entrepreneurship research. In answering these questions, the study developed and validated a model that included multi-dimensional and hierarchical entrepreneurial passion constructs, as well as the modelling of the constructs to look into their overall influence on entrepreneurial intention. The findings of the study are synthesized in the following sections and its implications are further discussed.

### **5.3.1 (Research Question 1) Does perceived effective entrepreneurship education positively relate to entrepreneurial intention, perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding among Nigerian university students?**

In an effort to answer this question, this study provided an empirical illustration by developing a structural model, indicating the relationship between the variables. However, the model included second-order and hierarchical-formative constructs of entrepreneurial passion of inventing and entrepreneurial passion using data from Nigerian university students. Moreover, the study used the approach of repeated indicators (Wold, 1985; Wetzels, Odekerken-Schröder, & Van Oppen, 2009) in estimating the higher-order latent variables and all constructs confirmed adequate measurement and structural properties. The study applied PLS path modelling in developing and validating the constructs of the study. The findings confirmed that effective entrepreneurship education was significantly positive in relation to all variables linked with the model, except its relationship with entrepreneurial intentions that showed negative but significant relationship. In the following sections, the relationship between effective entrepreneurship education and four other variables are discussed with their empirical and theoretical insights.

### **5.3.1.1 Perceived effective entrepreneurship education and entrepreneurial intention (H1)**

The empirical findings showed that perceived effective entrepreneurship education had been significant, but negatively related to entrepreneurial intentions ( $\beta = -.130$ ), thus, signifying that the students' perception of the effectiveness of entrepreneurship education significantly decreased their intention to venture into entrepreneurship. In another sense, it says that their perception of the entrepreneurship programme demotivated their desire to be an entrepreneur as a reliable profession. Perhaps, this finding could be attributed to the nature of handling and delivering this programme by the various Nigerian universities, as the influence of entrepreneurship education on entrepreneurial intention could depend on the mode of delivery (Dohse & Walter, 2010). This study contend that issue related to traditional approaches to learning and teaching, to quality of the programme and student attitudes, can conspire to frustrate a truly innovative approach to delivering an effective entrepreneurship education. Such is one that enables students to learn and to demonstrate their entrepreneurial capabilities in the only way that really matters and for real. This study strongly feel that entrepreneurship education delivery can do a lot to the process of learning to be an entrepreneur, which might not necessarily be learnt in the classroom, or found in text books, game simulations and traditional forms of assessment. A process of guided self-discovery is much necessarily required, where students can learn by doing, assuming a real entrepreneur's situation. This will come with a lot of guidance and coaching from educators to help the students in making better sense of what they have learnt from their experiences. This whole process requires; the students to be willing to get out of their comfort zone, the educators to be willing to resort to

mentoring and coaching approaches that required interaction with the students through their learning experiences and most importantly, institutions to be willing and capable of introducing courses of high quality and away from the conventional course delivery and the one that involve risk-taking.

In addition, the results also showed that the entrepreneurship education might not have a direct link with entrepreneurial intention and could only be understood through its impact on other variables that are related with intention. This can be substantiated by the study carried out by Zainuddin and Rejab (2010), which showed that the students did not perceive self-actualisation and expectations of their lecturers in becoming self-employed as influential, but believed that specialized entrepreneurship education contributed to increased entrepreneurial self-efficacy, and subsequently, towards their self-employment intention. Again, studies in the developing countries, especially in Africa, indicated that effective entrepreneurship education is yet to be developed (e.g. Nabi & Liñán, 2011; Lekoko *et al.*, 2012) to successfully provide students with entrepreneurial skills and competencies that would assist them in choosing entrepreneurship as a career option.

### **5.3.1.2 Perceived effective entrepreneurship education and perceived creativity disposition (H2)**

The findings indicated that perceived effective entrepreneurship education influenced the perceived creativity disposition of university students ( $\beta = -.406$ ). This means that the perception of the effectiveness of entrepreneurship education offered in universities

increased the perception of students' about their own creativity disposition. This result is especially attainable where the entrepreneurship education is supported with relevant complimentary activities that are aimed at increasing the motivation for entrepreneurship and making the entrepreneurship activities attractive. For example, Wilson *et al.*, (2007) showed that entrepreneurship educational programmes that involved the use of guest speakers and case studies in their teaching methods could build self-efficacy (Wilson *et al.*, 2007). Furthermore, this result is confirmed by previous studies by indicating that effective enterprise/entrepreneurship education must develop enterprising skills (Jackson, 2008; Pittaway *et al.*, 2009b) and that the key enterprising skill is creative thinking (Gibb, 1993; Gibb, 2002a). Hence, creativity development among students in business schools has become a matter of priority (Ghosh, 2014).

### **5.3.1.3 Perceived effective entrepreneurship education and entrepreneurial passion for inventing, as well as entrepreneurial passion for founding (H3; H4)**

The results of the study confirmed that effective entrepreneurship education had an impact on both entrepreneurial passion for inventing and entrepreneurial passion for founding ( $\beta = .411$ ;  $\beta = .329$  respectively). These relationships indicated that the perception of students about the effectiveness of the entrepreneurship education programme increased the students' passion for inventing and founding a business venture. This finding might be more effective if guest speakers with entrepreneurship success stories and role model entrepreneurs are employed to inspire students in the process of teaching entrepreneurship courses. Moreover, the emotional element of inspiration was found to be the most influenced benefit of the entrepreneurship

programme (Souitaris *et al.*, 2007b). Likewise, the entrepreneurship learning perspective did not only push students to focus on discovering new opportunities, but also the passion for searching opportunities that best fit their identity as future entrepreneurs (Corbett, 2005). Besides, Bonneville-Roussy *et al.*, (2013) have shown support for the hypotheses that teaching entrepreneurship education in autonomy supportive way could increase harmonious passion and persistence in the quest to create a business venture as a career in a student's life. Hence, entrepreneurship education is suggested to be capable of developing passion among students to pursue entrepreneurial career (Halvari *et al.*, 2009).

**5.3.2. (Research Question 2) Do Nigerian university students' perceived creativity dispositions, entrepreneurial passion for inventing, and entrepreneurial passion for founding positively relate to their entrepreneurial intentions?**

In an effort to answer this question, this study modelled the impact of perceived creativity dispositions, entrepreneurial passion for inventing, and entrepreneurial passion for founding on the entrepreneurial intentions among Nigerian university students. The results of the study confirmed strong significant associations between the latent variables in the structural model and proved the three hypotheses in the model. In the following sections, the significance of all these findings is discussed.



### 5.3.2.1 Perceived creativity dispositions and entrepreneurial intentions (H5)

The results of the study supported the perceived creativity dispositions construct as a significant predictor of entrepreneurial intentions ( $\beta = .157$ ). It showed that students, who felt that they possessed certain creative ability, would have a strong desire to behave entrepreneurially. In other words, individual students who judged their ability to be creatively disposed would eventually create a business. Hence, Zampetakis *et al.*, (2011) showed that the more creative the students thought they were, the higher their entrepreneurial intentions were. Moreover, most studies have supported self-assessment of creativity disposition, for example, Batey and Furnham (2008) argued that individuals understand themselves better when it comes to their own creative ability. Therefore, people should be given opportunity to judge their capability of generating new and valuable ideas that is necessary for entrepreneurs' success (Darini *et al.*, 2011). Consequently, the reason for becoming or not becoming an entrepreneur has been attributed to individual ability to think creatively or the perception that the individual possess creative ability. Overall, this result points to the importance of creativity and imagination as required skills in business decision-making process (Lourenço & Jayawarna, 2011).

### **5.3.2.2 Entrepreneurial passion for inventing and entrepreneurial passion for founding, as well as entrepreneurial intentions (H6 and H7)**

The findings confirmed entrepreneurial passion for inventing and entrepreneurial passion for founding as significant predictors of entrepreneurial intentions among students ( $\beta = .308$ ;  $\beta = .326$  respectively). These associations indicated that overall, entrepreneurial passion had been one of the major drivers of entrepreneurial intentions, thus, a high level of entrepreneurial passion is critically important in business creation and survival (Lackéus & Williams Middleton, 2011). These results are supported in previous studies as passion is said to influence people's behaviours (Donahue, 2008; Cardon, Sudek, *et al.*, 2009; Murnieks *et al.*, 2011). Additionally, Kickul and Krueger (2005) suggested that entrepreneurial intensity, which is a proxy for entrepreneurial passion, is related with intentions for intuitive. Passion is, therefore, seen to produce the feeling and the experience of getting closer to entrepreneurial activities among students (Pittaway *et al.*, 2009a; Bonneville-Roussy *et al.*, 2013).

### **5.3.3. (Research Question 3) Do perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding mediate the relationship between perceived effective entrepreneurship education and entrepreneurial intention among Nigerian university students?**

In an effort to answer this question, this study examined and reported findings on the mediating effects of perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding on the research model. These variables mediated the relationship between perceived effective entrepreneurship

education and entrepreneurial intention among Nigerian university students. However, the mediating variables included entrepreneurial passion for inventing and entrepreneurial passion for founding, which had been modelled as second-order and hierarchical formative variables. In addition, two important tests were employed to examine the mediations of PCD, EPI, and EPF on the relationship between PEEE and EI; the competing model analysis procedure, as suggested by Singh *et al.*, (1994) and testing the mediation through indirect effect and using bootstrapping procedure to assess its significance, as suggested by Preacher and Hayes (2008). The significance of these findings is discussed in the following sections.

#### **5.3.3.1 Explaining perceived creativity disposition as a mediator (H8)**

The findings of the study confirmed the mediating role of perceived creativity disposition between perceived effective entrepreneurship education and entrepreneurial intention. Using the two important tests to examine the mediation of PCD on the relationship between PEEE and EI, the result suggested a complete mediation ( $\beta = .064$ ). The findings confirmed that PCD explained the reason why PEEE was related to EI. In other words, PEEE first increased PCD of students and when PCD was developed, EI was increased among these students. This result also supported the main effects model, which confirmed that PEEE had a direct impact on PCD, PCD had a direct impact on EI, and that PEEE had an indirect impact through PCD. Hence, Kerr and Lloyd (2008) showed that the artful learning opportunities increased individual's ability to be mindful of the

creativity they possessed, and the more creative students thought they were, the higher their entrepreneurial intentions were (Zampetakis *et al.*, 2011).

Moreover, Peterman and Kennedy (2003) gave support for exposing students to entrepreneurship education as an additional mechanism for increasing the desirability and the feasibility of business creation, while Hamidi *et al.*, (2008) supported the creativity variable in predicting entrepreneurship intention, as their study also clearly showed the need for considering creativity in entrepreneurial intention-based models. However, with the overall linkages, Lekoko *et al.*, (2012) suggested that effective entrepreneurship education is important in providing students with entrepreneurial skills and competencies, which are expected to drive students' entrepreneurial intention. In addition, Zainuddin and Rejab (2010) showed that the students believed that specialized entrepreneurship education contributed to the increase in entrepreneurial self-efficacy, and subsequently, towards their self-employment intention, and thus, increased their employability value. Overall, this result clearly indicated that creativity occupies a central position in the process of entrepreneurship.

#### **5.3.3.2 Explaining entrepreneurial passion for inventing and entrepreneurial passion for founding as a mediators (H9; H10)**

The findings also confirmed the higher-order entrepreneurial passion for inventing and entrepreneurial passion for founding constructs as performing the mediating role between perceived effective entrepreneurship education and entrepreneurial intention ( $\beta = .127$ ;  $\beta$

= .107 respectively). These results suggested that to understand the relationship between PEEE and EI, the role of the two domains of passion must be understood. These relationships also suggested that EPI and EPF directly increased with PEEE (Padilla-Meléndez *et al.*, 2014), which are critically important for forming and influencing EI. The results of this study highlighted the importance of the effects of these cognitive and behavioural constructs in the entrepreneurship intention research using the higher-order entrepreneurial passion model. Hence, consideration of the formation of the potential entrepreneurs, as well as entrepreneurs' behaviour and cognition, will be valuable in clarifying the complex process of entrepreneurship (Baron, 2007). Consequently, the intention-based models support the inclusion of entrepreneurial desirability as a way of influencing the intention to create a business (Krueger Jr *et al.*, 2000), while Peterman and Kennedy (2003) gave support for exposing students to entrepreneurship education as an additional mechanism for increasing the desirability and the feasibility of business creation. Thus, entrepreneurship education should be capable of developing passion among students to pursue entrepreneurial career (Baum & Locke, 2004).

**5.3.4 (Research Question 4) Does perception of university support moderate the positive relationships between perceived effective entrepreneurship education and; perceived creativity disposition, entrepreneurial passion for inventing as well as entrepreneurial passion for founding among Nigerian university students?**

This study answered research question four by modelling the perception of university support as a moderator between the perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing, and

entrepreneurial passion for founding. These relationships were modelled in a structural form and PLS-SEM was used to determine its moderating role. As mentioned earlier, the entrepreneurial passion for inventing and entrepreneurial passion for founding were higher-order formative constructs. The results are discussed in the following section.

#### **5.3.4.1 Explaining the perception of university support as a moderator for the relationship between perceived effective entrepreneurship education and; perceived creativity disposition, entrepreneurial passion for inventing, as well as entrepreneurial passion for founding (H11; H12; H13)**

The research findings confirmed the need to include the students' perception of university support as a moderator in the relationship between perceived effective entrepreneurship education and two important variables; perceived creativity disposition and entrepreneurial passion for inventing, although the effect sizes had been small (Cohen, 1988). The positive interaction effects suggested that the higher the perception of students about the university support, the more the PEEE influenced PCD and EPI. On the other hand, the perception of university support proved not to be a moderator in the relationship between PEEE and EPF, given also that there is near absence of effect size for the interaction construct on EPF. This study proposed that university should be seen as promoters of entrepreneurship by providing entrepreneurship education and complimentary supports that are necessary to boost the potential intentions of venture creation. Thus, the study findings conforms to previous studies, for example, Bechard and Toulouse (1998) revealed that what is responsible for influencing students' decision to become entrepreneurs is embedded in the universities. In affirmation, Franke and Lüthje (2004) emphasised that universities do have control over some factors that can enhance

students' entrepreneurial intentions; they initiate entrepreneurial spirit by arranging and providing a conducive, creative, and supportive atmosphere, which is necessary for imaginative thinking that is useful and applicable. Accordingly, the university environment is the right place to mould and to influence students to build entrepreneurial intention (Franke & Lüthje, 2004). Therefore, environmental perception guides individual behaviour (OECD, 2010).

This study also suggests, in accordance to past studies, that entrepreneurship career development can be supported by universities (Turker & Selcuk, 2009) by employing role models in training, providing entrepreneurial support network, and encouraging business plan competitions among students (Lüthje & Franke, 2003). For example, students who participated in business plan competition reported that it had an impact in their career choice decision (Fleming, 1994). According to Keat *et al.*, (2011), and Wang and Verzat (2011), universities play significant roles in entrepreneurial curriculum and content development, as well as making entrepreneurship appealing to students. The entrepreneurial university is, therefore, has been considered to be the source of recognizing entrepreneurial opportunities, and thus, drivers of subsequent entrepreneurial action (Edelman & Yli-Renko, 2010; Urbano & Guerrero, 2013). Furthermore, these findings contributed in showing that the impact of university support may not be direct in forming intention (Geissler *et al.*, 2012), suggesting university support as an indirect motivator by influencing other factors known to increase intention. Thus, universities provide a level playground for breeding entrepreneurs (Johannisson *et al.*, 2001; Wang & Verzat, 2011).

However, there are possible explanation for the lack of moderation of the perception of university support for the relationship between PEEE and EPF. This finding suggested that the perception of students' about the university support did not increase their PEEE to influence their EPF. Nonetheless, this study offers two possible explanations from two angles; first, that students' immediate need and what is more realistic in their current status as students will be the entrepreneurial passion for inventing, which is characterized by individuals with passion for searching opportunities, delighted for always being on the run to usher in new products or services or new ways of doing things to solve current problems (Cardon, Wincent, *et al.*, 2009; Cardon *et al.*, 2013). Hence, the immediate need of graduates will be to search for available opportunities, and then, utilize these opportunities by introducing new products or services or new ways of doing things to the market. Moreover, this result also reflect the characteristics of the study sample as it included students from different academic background and profession, including engineers and other technical profession, whereby their training are required to lead in introducing new products or services to the world. In addition, these students might not have the required resources and there might not be available government support for them to acquire the necessary resources to find a company, since the passion for finding involves the organisation of human, financial, and social resources required to create a new venture (Cardon, Wincent, *et al.*, 2009).

Second, the universities do not have the required resources to deliver excellent entrepreneurship training programmes, and therefore, the students did not seem to have high perception of the university support in influencing the PEEE to increase EPF. This



study has, therefore, contributed in showing that although the higher perception of university support influenced PEEE to increase EPI, it did not for EPF, confirming further that it is indeed more rewarding and revealing if entrepreneurial passion is seen as a dimensional construct (Cardon *et al.*, 2013). The study has also drawn attention to the implications that are important in driving entrepreneurial activities in universities so as to provide the knowledge required in the modern economy. Finally, the study has addressed the calls for more studies to highlight on the interaction between personal and environmental factors (Schwarz *et al.*, 2009).

#### **5.4 Contribution of the Study**

This study presents its contributions in terms of theory, methodology, and practice. Theoretically, this study extends the use of both TPB and SEE frameworks to provide useful information related to entrepreneurship education and entrepreneurial intention. Methodologically, this study utilized hierarchical modelling using PLS in order to explain the relationships in its model. Practically, stakeholders responsible for entrepreneurship development will have a better picture of how EI are formed and how potential venture initiators' beliefs and perceptions impact on their intention to commence a business. Overall, it enables government and policy makers to direct thought and resources on young adults who are likely to form entrepreneurial intentions, and consequently, create business ventures.

### 5.4.1 Contribution to Theory

This study extends the use of both TPB and SEE frameworks to provide useful information related to entrepreneurship education and entrepreneurial intention. Krueger Jr *et al.*, (2000), however, suggested that the TPB is an important tool that allows educators to assess their training programmes. Specifically, the study extends the existing intention theories in the context of entrepreneurship by capturing students' perception of their own creativity disposition and entrepreneurial passion in two dimensions (passion for inventing and passion for founding). In addition, it adds novelty to the theories by modelling the relationship between effective entrepreneurship education and two new outcome constructs (i.e., passion for inventing and passion for founding), which have not previously been investigated.

Moreover, the entrepreneurial passion domain had been developed and validated as higher-order formative constructs with two dimensions of passion for inventing (Intense positive feelings for Inventing and Identity Centrality for Inventing) and passion for finding (Intense positive feelings for founding and Identity Centrality for Founding). Furthermore, the newness it adds to the theories is also in their application in a new research setting (developing country), as researches on enterprise/entrepreneurship education and entrepreneurial intentions in developing countries are highly under researched (Nabi & Liñán, 2011). Thus, the study believes that the proposed theoretical framework makes a significant contribution to knowledge in the context of entrepreneurship intentions.

Other than that, empirical application of the SEE has proven that entrepreneurial intention can be accounted for by individuals driven by the perception of feasibility and desirability of entrepreneurial activity (Krueger & Brazeal, 1994; Krueger Jr *et al.*, 2000; Fitzsimmons & Douglas, 2011). Accordingly, Reitan (1997) has explained that the perceived feasibility is concerned about the ease or difficulty in initiating business venture in relation to the opportunities available, knowledge acquired resources at disposal, and accurate self-assessment to create a venture. Thus, the inclusion of PEEE and PCD in particular has answered the call for more researches to consider factors that can highly contribute to the perceptions of feasibility (Krueger & Brazeal, 1994).

Meanwhile, the Shapero's entrepreneurial event theory also sees firm creation as an outcome of the interaction among contextual factors that could influence an individual's perceptions. Accordingly, Shapero and Sokol (1982) developed three stages in the venture creation process. The first is explained by displacements, which could positively or negatively predispose an individual to pursue entrepreneurship. The second stage is the push to be an entrepreneur due to the presence of some circumstances (i.e. training, environment, and family). In the last stage, the prospective entrepreneur will decide to establish a business when certain conditions are attained, for example, access to finance, supporting activities, human resources, etc., and hence, framing the perception of university support in this study model to interact with PEEE to increase PCD and entrepreneurial passion has considerably supported the theory.

Another concept that is closely related to the perceived behavioural control in TPB and perceived feasibility in SEE is the perceived entrepreneurial skills. When an individual has a good perception of his skill in undertaking an entrepreneurial activity, he is motivated in building entrepreneurial intention. However, the concern is not with the possession of the skills, but with the good assessment of how to utilize the skills (Bandura, 1986). Thus, modelling perceived creativity disposition to explain entrepreneurial intention of students in the current study is a valid contribution to the theories. Finally, the study has also contributed to the stream of researches that have applied theory of planned behaviour to study student population in entrepreneurship research (Krueger & Carsrud, 1993; Krueger Jr *et al.*, 2000).

#### **5.4.2 Contribution to Methodology**

This study utilized the first-order and hierarchical constructs model, with a mix of formative and reflective constructs by using PLS in order to explain the relationships in its model. It is one of the few attempts to conceptualize and validate a hierarchical model using PLS in the context of entrepreneurship intention research. Employing the repeated indicators approach (Wold 1982; Lohmoller 1989) in estimating a higher-order formative latent variable, the study confirmed adequate measurement and structural properties for the research model (Chin, 2010; Hair *et al.*, 2011). Moreover, the application of PLS makes it possible to extend the theoretical contribution of the study by developing and validating a second-order and formative entrepreneurial intention model.

The study further showed that higher-order constructs can be developed with outcome constructs in a structural model to prove nomological validity. The study also demonstrated the robustness of the analysis by illustrating how to quantify mediating and moderating variables in a hierarchical model. This is a situation where PLS outperformed covariance-based SEM (CBSEM) in estimating a formative second-order and hierarchical model by successfully avoiding the various constraints of CB-SEM in terms of distributional properties (multivariate normality), measurement level, sample size, and model complexity. Additionally, when formative constructs are involved in a nomological network, then PLS path modelling can handle it easily (Wetzels *et al.*, 2009). Consequently, “PLS path modelling would be more suitable to more complex models, including models with hierarchical constructs (with a total disaggregation approach), mediating effects, and moderating effects” (Wetzels *et al.*, 2009, p. 190).

Furthermore, employing the use of higher-order constructs in this study has added to the theoretical parsimony and has reduced the model complexity (Becker, Klein, & Wetzels, 2012). Nonetheless, two approaches were used to estimate the parameters in the hierarchical latent variable model using the PLS-SEM; the repeated indicator approach; and the two-stage approach (Wetzels *et al.*, 2009; Ringle, Sarstedt, & Straub, 2012). These approaches are suitable for a complex path model that has in it a formative hierarchical latent variable serving as an endogenous variable (Becker *et al.*, 2012). This study, however, in the first stage of its analysis using the PLS-SEM, estimated the repeated indicator model, while the second stage of a separate platform used the first-order construct scores to estimate the model (Ringle *et al.*, 2012). The advantage of the

repeated indicator is its ability to estimate the model simultaneously, thus, avoiding the confounding problem of interpretation (Becker *et al.*, 2012).

Another contribution of this study is the adopting of new instrument developed by Cardon *et al.*, (2013) to capture the exact nature of entrepreneurial passion in an empirical research. This study had been among the first that employed these measures in an empirical settings, as previous studies have used instrument of passion developed in the field of psychology to measure entrepreneurial passion. Therefore, this study has further, confirmed the new measures for validity and reliability as important items to capture the dimensions in the domains of entrepreneurial passion. The study has also complied with the call that a good measure of entrepreneurial passion integrates the relationship between the feelings and the centrality of the entrepreneur's self-identity for each domain (Cardon *et al.*, 2013).

Although, Cardon *et al.*, (2013) developed an instrument that captured the exact measures of the experience of passion, they only stopped at the level of developing and validating the instrument, whereas this study was extended further to test the impact of entrepreneurial passion as a mediator, as well as their impact on an outcome variable. Finally, this study used additional analysis indicators, such as; power analysis, predictive relevance, and effect size to further prove the predictive ability of the study model. Thus, this study has further demonstrated that PLS-SEM is a robust technique, especially when complex models are involved and that it is handy for the real world application.

### 5.4.3 Contribution to Practice

This study offers several important practical contributions; in understanding the antecedents of entrepreneurial intentions among Nigerian university students, which would alert all stakeholders' responsible for entrepreneurship development to have a better picture of how EI is formed and how potential venture initiators' beliefs and perceptions have an impact on their intention to commence business. The study reveals the role of entrepreneurship education in driving individual personality trait to increase entrepreneurial intention if the programme is made effective. This will enable the government and the policy makers to direct thoughts and resources on young adults, who in all possibility, will form entrepreneurial intentions and subsequently be involved in entrepreneurial behaviour. Therefore, knowledge of the determinants of entrepreneurial intention can help in entrepreneurial training and in discovering the best ways to mould the intention, as well as enhance the likelihood of the consequential behaviour of new business start-up.

This study also encourages universities to intervene in various capacities in order to enhance the achievement of the goal of initiating and encouraging business start-up by young graduates. Hence, some scholars have pointed out that the challenges for the developing world is to develop graduate entrepreneurs and to provide suitable and supportive environments that will contribute to the growth of entrepreneurship (Nabi & Liñán, 2011). However, the findings of this study provided certain clues that can be employed for future design of entrepreneurship education; (1) it showed the need for

educators to design training programmes that would help in developing enterprising behaviours, characteristics, and skills necessary for business start-up, (2) to introduce creativity-enhancing technique that will make the overall process interesting and fun, and (3) to introduce usefulness learning contents with practical reality since it is capable of affecting students' entrepreneurial intentions via their creative ability development.

In addition, via entrepreneurship education, educators could increase the possibility of students showing strong entrepreneurial passion if the students' are made to recognise that entrepreneurial opportunities exist in diverse areas and disciplines, as well as in encouraging them to consider the areas and disciplines they are most interested in, and then, developing exercises to explore entrepreneurial opportunities in those areas. Furthermore, role models could be employed to give motivational talks that will inspire students and build their passion towards entrepreneurship (Cardon *et al.*, 2005; Cardon, Sudek, *et al.*, 2009). Furthermore, university environment could create specific conditions to trigger students' creativity disposition and entrepreneurial passion, especially in recognizing how these important factors can increase students' intentions to consider entrepreneurship as a career option.

Moreover, the findings of this study, in regard to lack of the moderating effect of the perception of university support in the relationship between PEEE and EPF, is a cause for concern because organisation of human, financial, and social resources are vitally required to create a new venture (Cardon, Wincent, *et al.*, 2009), which is critical as students graduate and face the bane of unemployment, especially in developing and under



developed economies (Van Gelderen *et al.*, 2008; Shaikh, 2012). Therefore, universities should make decisive efforts to encourage business formation, as this can be achieved if prototype companies are allowed to be formed and managed by student groups on campus. This process will help students in acquiring the requisite experience in founding companies in the future, and hence, resulting towards achieving independence, high financial returns, and contributing to better economic structure of a nation (Lüthje & Franke, 2003; Tan *et al.*, 2005; Martinez *et al.*, 2010; Ahmed *et al.*, 2011; Ayobami & Ofoegbu, 2011). In addition, it will be interesting and more rewarding if entrepreneurship education programmes are tailored to suite students' specializations in schools. This will be important so that students will begin to see the entrepreneurship education courses as a necessary part in their professional training. It will most importantly direct their attention to desire establishing their own firm to practice their profession.

Finally, this study should be of interest to the groups of researchers, teachers, and supporters of entrepreneurship because it clarifies the interplay between the underexplored concepts of the effectiveness of entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing and founding, as well as the perception of university support in the formation of overall entrepreneurial intention. It is also hoped that this study would guide further researches into exploring the interplay of personality traits and environmental conditions in enhancing entrepreneurship.

## 5.5 Limitation and Future Research Direction

Some limitations are worth noting. First, this research was conducted within the North Western states. Although the results may not differ if conducted in other parts of the country, since the programme was mandated by the federal government at the same time and carries similar curriculum, it will nonetheless increase the confidence in the research model. Hence, future studies should replicate this study in other parts of the country.

Second, the labelling of some constructs (e.g. perceived effective entrepreneurship education, perceived creativity disposition, and the perception of university support) is purely based on the sample population, which had been the Nigerian university students. The concept would have changed if the authorities in the universities and the entrepreneurship educators were involved. This will serve as a direction for future studies to reconceptualise the constructs of this study and investigate other stakeholders' involvement in the development of entrepreneurship education programmes. Hence, it is hoped that more interesting outcomes can be realised.

Third, the study has a typical limitation for its methodology, especially concerning data collection under the cross-sectional design. In other words, the findings were confined to a single point of time. Longitudinal study could bring out deeper understanding. Thus, future studies should conduct longitudinal studies to investigate students while still in school and to extend the studies after years of graduation. This will reveal the realisation

of the said intention while in school. In other words, studies can confirm the translation of entrepreneurial intention into actual entrepreneurial behaviour after graduation.

Fourth, this study was purely quantitative; as such quantitative measures of the constructs and the use of quantitative analysis were only possible. The construct of this study can as well be observed qualitatively. Therefore, future studies could examine the variables of this study qualitatively. It is likely that more insights and even plausible explanation for the outcome of the quantitative study can be known. Moreover, qualitative study could uncover the true reaction of the participants as the researchers can observe and interact directly while information is collected from the participants. This is difficult in quantitative sense.

Fifth, this study collected information from one source, which was students, and also assessed its variables using a common method, which could be affected by common method bias. Common method variance is defined as a “systematic error variance shared among variables measured with and introduced as a function of the same method and/or source” (Richardson *et al.*, 2009). Common method variance is assumed to have effect in the relationship between variable by either inflating or attenuating the relationships (Williams & Brown, 1994). It is particularly present and strong in behavioural research, because most behavioural studies are carried out in a condition where data for the predictor and criterion variables are obtained from the same individual in the same measurement context using the same item context and similar item characteristics (Podsakoff *et al.*, 2003). Although this study had control for CMV by using two major

ways, as suggested by Podsakoff *et al.*, (2003); pertaining to the design of the study procedures and/or statistical controls, future research in this area, should collect information for the predictor and the criterion variables of a particular study from different sources (Podsakoff *et al.*, 2003) to account for CMV. This is possible, for example, if data for a similar study are collected from the students on some variables and for other variables from the university authorities or the educators.

Sixth, all the measures of the variables in this study were subjective measures, since students gave responses based on their perceptions. Future works on similar variables could obtain objective measures, for example, performance of students on a class test or using a particular designed test, like using a creativity performance test, which will be appropriate in certain situation. The outcome can also be compared with that of the existing subjective measures. This approach might reveal some interesting findings.

Seventh, the sample only represented university students, and hence, generalizability of the findings to other students from other higher institutions, such as polytechnic and colleges of educations, cannot be made. There might be differences in outcome as it involves different institutions, different management authorities, and different supervisory government agencies. Future works can study students from other institutions or even a mix of institutions, which can lead to possible comparison among the various institutions.

Finally, although the variance explained by the research model is quite reasonable for the study, future research should attempt to identify and test additional variables for the model with a view to present an even richer understanding of the formation of entrepreneurial intention and the eventual entrepreneurial behaviour. This addition might be shaped in terms of additional contextual variables, moderating influences, mediating effects, new study groups, and other contexts. Moreover, findings from such studies might enhance the overall generalizability in terms of entrepreneurial intention and may increase the variance explained in entrepreneurial intention.

## **5.6 Conclusion**

The key objectives of the study were to determine if perceived effective entrepreneurship education increased entrepreneurial intention, perceived creativity disposition, and the two domains of entrepreneurial passion (inventing and founding) among Nigerian university students, and to subsequently determine if the students perceived creativity dispositions and entrepreneurial passions in relation to their entrepreneurial intentions. In addition, the study examined the mediating effects of perceived creativity disposition, entrepreneurial passion for inventing, and entrepreneurial passion for founding in the positive relationship between perceived effective entrepreneurship education and entrepreneurial intention, and on the other hand, the moderating effect of the perception of university support in the positive relationship between perceived effective entrepreneurship education, perceived creativity disposition, and entrepreneurial passion among Nigerian university students. To pursue the stated objectives, this study utilized

intention theories and related literatures from entrepreneurship and psychological researches to develop a conceptual framework and to formulate hypotheses for the study.

The research model was specified, including hierarchical-formative constructs, which were then tested in the context of university students in Nigeria. A total of 111 samples were used for the pilot study to validate the instrument. For the final study, 595 samples were analysed to test the study model. The partial least squares (PLS) path modelling was employed to estimate the model and to test the relationships between the constructs. The findings of the study confirmed that the measurement and the structural properties of the research model had been adequate. The study proved the six directional hypotheses and confirmed the significant effects of three mediating variables; PCD, EPI, and EPF. In addition, the study proved the moderating influence of perceived university support on two relationship; PEEE  $\rightarrow$  PCD, and PEEE  $\rightarrow$  EPI, but no mediating effect on the relationship between PEEE and EPF.

This study is a pioneering work in modelling the mediating effects of perceived creativity disposition and the two entrepreneurial passion domains (EPI and EPF) modelled as second-order and hierarchical formative constructs in entrepreneurship education and entrepreneurial intention research, as well as their overall impact on the outcome construct (EI). The study contributes to the understanding of stakeholders in entrepreneurship development on the formation of entrepreneurship intention, and therefore, given the general picture of possible venture creation in the future. This will enable the government and the policy makers to direct thoughts and resources on young

adults who are the hope of the nation in entrepreneurship development. It is also hoped that this study will guide further researches into exploring the interplay of personality traits and environmental conditions in enhancing entrepreneurship.

Overall, this study has portrayed that effective entrepreneurship education is a critical factor in creativity enhancement and entrepreneurial passion building, as well as in playing a significant role in entrepreneurial intention formation, which has a direct effect on entrepreneurial behaviour. The study has also underscored the role of contextual factor of university support in moulding entrepreneurship education to build creativity and develop passion, with the ultimate goal of encouraging business creation; a critical factor in nation building. Finally, entrepreneurial intention and the subsequent entrepreneurial behaviour will be the ultimate societal application in developing countries, especially in Nigeria, to address the pressing unemployment situation.

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## Appendix A

### Academic Research Questionnaire

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Dear Students,

#### ACADEMIC RESEARCH QUESTIONNAIRE

I am a PhD student of the above mentioned institution, currently undertaking a PhD research titled “Relationship between perceived effective entrepreneurship education and entrepreneurial intention: the moderating effect of the perception of university support and the mediating effects of perceived creativity disposition and entrepreneurial passion.”

We shall be grateful if you can help us fill in this questionnaire. We assure the respondents that any information shared will only be used for academic purpose. Therefore, be assured of utmost confidentiality.

Thank you in anticipation of your valuable responses.

Yours' Faithfully,

**Abdullahi Nasiru**

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**Part A: Measurement of perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion, perception of university support and entrepreneurial intention.**

1. Below are 5 questions asking you of how you perceived entrepreneurship education to be effective. For each question, optional numbers from 1 to 7 are assigned. Selecting a number that is high means you have found the programme to a higher extent effective. Allocating a lower number means you perceived the programme less effective. Against each question, please “circle” the number which comes closest to how effective you think the programme has been. Remember to “circle” one number for each question.

<b>Perceived Effective Entrepreneurship Education</b>	Not at all	To large extent
To what extent did the entrepreneurship education programme:		
1. increase your understanding of the attitudes, values and motivation of entrepreneurs (i.e. why do entrepreneurs act?)	1	7
2. increase your understanding of the actions someone has to take in order to start a business (i.e. what needs to be done?)	1	7
3. enhance your practical management skills in order to start a business (i.e. how do I start the venture?)	1	7
4. enhance your ability to develop networks (i.e. who do I need to know?)		
5. enhance your ability to identify an opportunity (i.e. when do I need to act?).	1	7
	1	7

2. Listed below are eight statements pertaining to how you perceived your personal creativity disposition i.e. whether you think you are creative. For each statement please “tick” the number which best describes how strongly you agree or disagree. For example if you strongly agree that you do come up with creative solutions to problem, then “tick” the number 7. On the other hand, if strongly disagree with the statement that you do come up with creative solutions to problems, then “tick” the number 1. Please remember to “tick” on one number for each statement.

Perceived Creativity Disposition	Strongly Disagree				Strongly Agree		
	1	2	3	4	5	6	7
1. I come up with creative solutions to problems.	1	2	3	4	5	6	7
2. I am a good source of creative ideas.	1	2	3	4	5	6	7
3. I came up with new and practical ideas to improve performance.	1	2	3	4	5	6	7
4. I suggest new way to increase the quality of my project assignments.	1	2	3	4	5	6	7
5. I promote and champions ideas to others.	1	2	3	4	5	6	7
6. I exhibits creativity on an assignment when given the opportunity to.	1	2	3	4	5	6	7
7. I often have new and innovative ideas.	1	2	3	4	5	6	7
8. I suggest new ways to performing work assignments.	1	2	3	4	5	6	7

3. Listed below are nine statements on entrepreneurial passion; 5 statements on entrepreneurial passion for inventing and four statements on entrepreneurial passion for founding. For each statement please “tick” the number which best describes how strongly you agree or disagree. Please remember to “tick” on one number for each statement.

**Entrepreneurial Passion:**

<b>Entrepreneurial Passion for Inventing</b>	<b>Strongly Disagree</b>				<b>Strongly Agree</b>		
1. It is exciting to figure out new ways to solve unmet market needs that can be commercialized.	1	2	3	4	5	6	7
2. Searching for new ideas for products/services to offer is enjoyable to me.	1	2	3	4	5	6	7
3. I am motivated to figure out how to make existing products/services better.	1	2	3	4	5	6	7
4. Scanning the environment for new opportunities really excites me.	1	2	3	4	5	6	7
5. Inventing new solutions to problems is an important part of who I am.	1	2	3	4	5	6	7
<b>Entrepreneurial Passion for Founding</b>	<b>Strongly Disagree</b>				<b>Strongly Agree</b>		
1. Establishing a new company excites me.	1	2	3	4	5	6	7
2. Owning my own company energizes me.	1	2	3	4	5	6	7
3. Nurturing a new business through its emerging success is enjoyable.	1	2	3	4	5	6	7
4. Being the founder of a business is an important part of who I am.	1	2	3	4	5	6	7

4. Listed below are seven statements pertaining to how you perceived your university to be supportive in terms of the entrepreneurship programme. For each statement please “tick” the number which best describes how strongly you agree or disagree. Please also remember to “tick” on one number for each statement.

Perception of University Support	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
1. In my university, students are actively encouraged to pursue their own business ideas.	1	2	3	4	5	6	7
2. The entrepreneurship course provides students with the knowledge required to start a new company.	1	2	3	4	5	6	7
3. My university has a well-functioning support infrastructure in place to support the start-up of new firms.	1	2	3	4	5	6	7
4. The creative atmosphere in my university inspires us to develop ideas for new businesses.	1	2	3	4	5	6	7
5. Students are encouraged to pursue entrepreneurship ventures in my University	1	2	3	4	5	6	7
6. More entrepreneurship programmes on campus would help students to start businesses	1	2	3	4	5	6	7
7. My University is an ideal place to learn about starting a business	1	2	3	4	5	6	7
8. Entrepreneurial or business related examples are included in classroom teaching.	1	2	3	4	5	6	7
9. My university infrastructure and policies discourage entrepreneurship. (R)	1	2	3	4	5	6	7
10. In my University I get to meet lots of people with good ideas for new businesses.	1	2	3	4	5	6	7
11. There are no student clubs on campus which promote entrepreneurship. (R)	1	2	3	4	5	6	8
12. Entrepreneurial activities are limited only to business students. (R)	1	2	3	4	5	6	7
13. Entrepreneurship courses should be made compulsory in order to stimulate entrepreneurial spirit in campus.	1	2	3	4	5	6	7
14. The university provides resources to assist student entrepreneurs.	1	2	3	4	5	6	7

5. Listed below are six statements on how you have built the entrepreneurial intention to start business in the near future given the instituted entrepreneurship programme. For each statement please “tick” the number which best describes how totally you agree or disagree. Please also remember to “tick” on one number for each statement.

Entrepreneurial Intention	Total Disagreement							Total Agreement						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1. I am ready to do anything to be an entrepreneur.														
2. My professional goal is to become an entrepreneur.														
3. I will make every effort to start and run my own firm.														
4. I am determined to create a firm in the future.														
5. I have very seriously thought of starting a firm.														
6. I have the firm intention to start a firm someday.														

**Part B: Demographic Information**

Below are demographic information required, please indicate by “ticking” the appropriate boxes which applies to you.

**1. Gender**

1	Male	
2	Female	

**2. University**

1	Ahmadu Bello University (ABU), Zaria.	
2	Bayero University Kano (BUK), Kano.	
3	Usman Danfodio University Sokoto (UDUS), Sokoto	



**3. Faculty:** Please indicate your faculty

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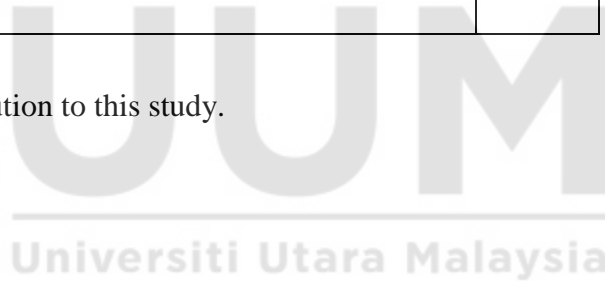
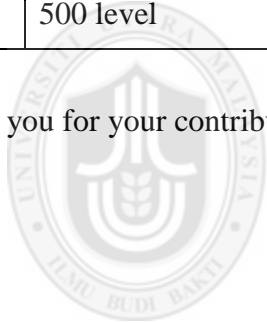
**4. Profession:** Please indicate your Profession

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**5. Level**

1	100 level	
2	200 level	
3	300 level	
4	400 level	
5	500 level	

Thank you for your contribution to this study.



## Appendix B

### Replacement of Missing Values

<b>Result Variables</b>						
	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
1	PEEE1_1	0	1	678	678	SMEAN(PEEE1)
2	PEEE2_1	2	1	678	678	SMEAN(PEEE2)
3	PEEE3_1	1	1	678	678	SMEAN(PEEE3)
4	PEEE4_1	1	1	678	678	SMEAN(PEEE4)
5	PEEE5_1	1	1	678	678	SMEAN(PEEE5)
6	PCD1_1	0	1	678	678	SMEAN(PCD1)
7	PCD2_1	5	1	678	678	SMEAN(PCD2)
8	PCD3_1	5	1	678	678	SMEAN(PCD3)
9	PCD4_1	3	1	678	678	SMEAN(PCD4)
10	PCD5_1	2	1	678	678	SMEAN(PCD5)
11	PCD6_1	2	1	678	678	SMEAN(PCD6)
12	PCD7_1	0	1	678	678	SMEAN(PCD7)
13	PCD8_1	3	1	678	678	SMEAN(PCD8)
14	EPI1_1	0	1	678	678	SMEAN(EPI1)
15	EPI2_1	0	1	678	678	SMEAN(EPI2)

### Result Variables

	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
16	EPI3_1	2	1	678	678	SMEAN(EPI3)
17	EPI4_1	1	1	678	678	SMEAN(EPI4)
18	EPI5_1	6	1	678	678	SMEAN(EPI5)
19	EPF1_1	0	1	678	678	SMEAN(EPF1)
20	EPF2_1	3	1	678	678	SMEAN(EPF2)
<b>21</b>	<b>EPF3_1</b>	<b>0</b>	<b>1</b>	<b>678</b>	<b>678</b>	<b>SMEAN(EPF3)</b>
22	EPF4_1	2	1	678	678	SMEAN(EPF4)
23	PUS1_1	0	1	678	678	SMEAN(PUS1)
24	PUS2_1	3	1	678	678	SMEAN(PUS2)
25	PUS3_1	4	1	678	678	SMEAN(PUS3)
26	PUS4_1	0	1	678	678	SMEAN(PUS4)
27	PUS5_1	1	1	678	678	SMEAN(PUS5)
28	PUS6_1	1	1	678	678	SMEAN(PUS6)
29	PUS7_1	4	1	678	678	SMEAN(PUS7)
30	PUS8_1	5	1	678	678	SMEAN(PUS8)
31	PUS9_1	7	1	678	678	SMEAN(PUS9)
32	PUS10_1	11	1	678	678	SMEAN(PUS10)

### Result Variables

	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
33	PUS11_1	9	1	678	678	SMEAN(PUS11)
34	PUS12_1	15	1	678	678	SMEAN(PUS12)
35	PUS13_1	4	1	678	678	SMEAN(PUS13)
36	PUS14_1	5	1	678	678	SMEAN(PUS14)
37	EI1_1	0	1	678	678	SMEAN(EI1)
38	EI2_1	4	1	678	678	SMEAN(EI2)
39	EI3_1	11	1	678	678	SMEAN(EI3)
40	EI4_1	1	1	678	678	SMEAN(EI4)
41	EI5_1	1	1	678	678	SMEAN(EI5)
42	EI6_1	0	1	678	678	SMEAN(EI6)

## Appendix C

### Overview of the Measurement Model

	<b>AVE</b>	<b>Composite Reliability</b>	<b>R Square</b>	<b>Cronbachs Alpha</b>	<b>Communality</b>	<b>Redundancy</b>
<b>EI</b>	0.761610	0.940913	0.386069	0.920882	0.761610	0.191921
<b>EPF</b>	0.638891	0.876076	0.999983	0.811190	0.638891	0.255713
<b>EPI</b>	0.640998	0.899093	0.999972	0.859317	0.640998	0.187641
<b>ICF</b>	1.000000	1.000000		1.000000	1.000000	
<b>ICI</b>	1.000000	1.000000		1.000000	1.000000	
<b>IPFF</b>	0.682369	0.865604		0.766992	0.682369	
<b>IPFI</b>	0.688038	0.898159		0.848764	0.688038	
<b>PCD</b>	0.574736	0.904315	0.331960	0.876539	0.574736	0.140048
<b>PEEE</b>	0.620743	0.891046		0.847548	0.620743	
<b>PUS</b>	0.548773	0.858630		0.795597	0.548773	



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## Appendix D

### Path Coefficients (Mean, Stdev, T-values) of the Research Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics ( O/STERR )
<b>EPF -&gt; EI</b>	0.326436	0.326553	0.055044	0.055044	5.930449
<b>EPI -&gt; EI</b>	0.308370	0.309705	0.053087	0.053087	5.808739
<b>PCD -&gt; EI</b>	0.157044	0.156807	0.047275	0.047275	3.321960
<b>PEEE -&gt; EI</b>	-0.130038	-0.130895	0.043779	0.043779	2.970314
<b>PEEE -&gt; EPF</b>	0.328949	0.328310	0.042748	0.042748	7.695143
<b>PEEE -&gt; EPI</b>	0.411441	0.410548	0.042721	0.042721	9.630924
<b>PEEE -&gt; PCD</b>	0.405748	0.405141	0.044116	0.044116	9.197326
<b>PUS -&gt; EPF</b>	0.248694	0.248919	0.041385	0.041385	6.009341
<b>PUS -&gt; EPI</b>	0.346229	0.346793	0.037071	0.037071	9.339748
<b>PUS -&gt; PCD</b>	0.297942	0.298209	0.039720	0.039720	7.501103

## Appendix E

### Mediation Analysis with Bootstrapping Output from PLS

	Path a	Path b	Indirect Effect	SE	t-value	Bootstrapped Confidence Interval	
						95% LL	95% UL
H1	0.406	0.157	0.064	0.020	3.187	0.025	0.103
H2	0.329	0.326	0.107	0.024	4.469	0.060	0.154
H3	0.411	0.308	0.127	0.026	4.869	0.076	0.178



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## Appendix F

### Blindfolding Output from PLS

#### Construct Crossvalidated Redundancy (EI)

Total	SSO	SSE	1-SSE/SSO
EI	595.000000	373.376062	0.372477

#### Construct Crossvalidated Redundancy (PCD)

Total	SSO	SSE	1-SSE/SSO
PCD	595.000000	399.784029	0.328094

#### Construct Crossvalidated Redundancy (EPI)

Total	SSO	SSE	1-SSE/SSO
EPI	595.000000	370.441859	0.377409

#### Construct Crossvalidated Redundancy (EPF)

Total	SSO	SSE	1-SSE/SSO
EPF	595.000000	467.335141	0.214563



## Appendix G

### Harman's Single-Factor Test

#### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
	1	12.207	29.064	29.064	12.207	29.064	29.064
2	3.332	7.933	36.997	3.332	7.933	36.997	8.552
3	2.903	6.911	43.908	2.903	6.911	43.908	5.772
4	1.974	4.700	48.608	1.974	4.700	48.608	6.888
5	1.649	3.927	52.536	1.649	3.927	52.536	8.016
6	1.393	3.315	55.851	1.393	3.315	55.851	3.166
7	1.118	2.662	58.513	1.118	2.662	58.513	6.136
8	1.058	2.520	61.032	1.058	2.520	61.032	1.937
9	.965	2.297	63.329				
10	.872	2.077	65.406				
11	.801	1.906	67.312				
12	.776	1.848	69.160				
13	.765	1.821	70.981				
14	.699	1.665	72.645				
15	.668	1.591	74.236				
16	.621	1.479	75.715				
17	.613	1.458	77.174				
18	.581	1.382	78.556				
19	.558	1.328	79.884				
20	.541	1.288	81.172				
21	.518	1.234	82.406				
22	.513	1.221	83.628				
23	.488	1.161	84.788				
24	.466	1.110	85.898				
25	.464	1.104	87.002				

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
	26	.450	1.071	88.073			
27	.429	1.020	89.093				
28	.405	.963	90.057				
29	.388	.925	90.981				
30	.378	.900	91.881				
31	.362	.862	92.743				
32	.349	.831	93.574				
33	.337	.801	94.375				
34	.328	.781	95.156				
35	.323	.770	95.925				
36	.310	.737	96.662				
37	.292	.696	97.358				
38	.271	.645	98.003				
39	.255	.606	98.609				
40	.232	.552	99.161				
41	.193	.460	99.621				
42	.159	.379	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

## Appendix H

### Power Analysis (Using the Program G\*Power 3.1.9.2)

**F tests** - Linear multiple regression: Fixed model,  $R^2$  deviation from zero

**Analysis:** Post hoc: Compute achieved power

**Input:** Effect size  $f^2$  = 0.02  
 $\alpha$  err prob = 0.05  
Total sample size = 595  
Number of predictors = 4

**Output:** Noncentrality parameter  $\lambda$  = 11.9000000  
Critical F = 2.3870368  
Numerator df = 4  
Denominator df = 590  
Power ( $1-\beta$  err prob) = 0.7950335

