Universiti Utara Malaysia

ENTREPRENEURSHIP EDUCATION AND ENTREPRENEURIAL CAREER OPTION AMONG POLYTECHNIC STUDENTS IN NORTHWESTERN NIGERIA: THE MEDIATING EFFECT OF CREATIVITY

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Abstrak

Objektif utama kajian ini adalah untuk menyelidik kesan pengantara kreativiti bagi hubungan antara komponen pendidikan keusahawanan (EE) dan pilihan kerjaya keusahawanan (ECO) dalam kalangan pelajar politeknik di Barat Laut Nigeria. Data kajian dikumpulkan melalui kaedah reka bentuk kajian keratan rentas. Kajian ini menggunakan pensampelan berstrata berbilang tahap untuk memilih enam politeknik dan menggunakan persampelan rawak bersandar untuk memilih 505 responden, manakala soal selidik pula ditadbir kendiri. Sebanyak 348 maklum balas telah diterima dan boleh digunakan untuk menilai 11 hipotesis secara langsung dan 5 hipotesis secara tidak langsung, manakala Partial Least Squares Structural Equation Modelling (PLS-SEM) telah digunakan untuk menguji hipotesis tersebut. Kajian ini mendapati bahawa objektif berkaitan pengetahuan tentang tahu-apa (KWT), tahu-bagaimana (KHW), tahu-siapa (KWO), tahu-mengapa (KWY), tahu-bila (KWN) dan kreativiti (CRT) mempengaruhi pelajar untuk terlibat dalam ECO di Barat Laut Nigeria. Dapatan kajian menunjukkan bahawa KWT, KHW, KWY, dan KWN bergantung kepada tahap CRT pelajar. Oleh itu, diharapkan agar KWO dan KWN akan dapat meningkatkan ECO pelajar, tetapi penemuan kajian ini bertentangan dengan harapan ini kerana hubungan antara KWO, KWN dan ECO adalah tidak signifikan. Namun, apa yang lebih menariknya ialah dapatan kajian ini menunjukkan bahawa kreativiti menjadi pengantara bagi hubungan antara KWT, KWO, KWY, KWN dan ECO, tetapi tidak kepada hubungan KHW dan ECO. Justeru, Institut Pengajian Tinggi (IPT) perlu memberi penekanan kepada KWT, KWO, KWY, dan KWN, tetapi penekanan lebih lanjut kepada KHW dapat menghasilkan kreativiti yang lebih rendah. Hasil kajian ini memberikan pandangan yang signifikan kepada pihak yang berkepentingan dan penyelidik EE untuk membuat kajian lanjut tentang hubungan EE, CRT, dan ECO. Kajian semasa memberi sumbangan kepada literatur tentang bagaimana CRT menjadi pengantara dalam hubungan semua komponen EE dan ECO, terutamanya dalam konteks Nigeria kerana kajian sedemikian jarang dilakukan. Kajian ini juga mencadangkan strategi dan hala tuju praktikal untuk penyampaian kursus EE yang berkesan sejajar dengan amalan terbaik di peringkat global. Akhir sekali, batasan kajian semasa dan kajian pada masa hadapan turut dibincangkan dalam kajian ini.

Kata kunci: pendidikan keusahawanan, pilihan kerjaya keusahawanan, kreativiti, politeknik, Barat Laut Nigeria.

Abstract

The study's primary objective is to examine the mediating effect of creativity on the relationship between components of entrepreneurship education (EE) and entrepreneurial career option (ECO) among polytechnic students in northwestern Nigeria. Data were collected from polytechnics through cross-sectional study design. The study adopted multistage stratified sampling to select six polytechnics and used proportionate random sampling to select 505 respondents, and questionnaires were self-administered. 348 usable responses were gathered to assess 11 direct and 5 indirect hypotheses and Partial Least Squares Structural Equation Modelling (PLS-SEM) was used in the hypotheses testing. This study found that know-what (KWT), know-how (KHW), know-who (KWO), know-why (KWY), know-when (KWN), and creativity (CRT) are essential EE components of EE objectives that influence students to engage in ECO in northwestern Nigeria. The findings revealed that KWT, KHW, KWY, and KWN depends on the CRT disposition of the students. It is expected KWO and KWN would increase students' ECO, but the findings of this study ran contrary to this expectation, as the relationship between KWO, KWN and ECO was not significant. Interestingly, the findings further showed that creativity significantly mediate the relationship between KWT, KWO, KWY, KWN and ECO, but not the relationship between KHW and ECO. Higher educational institutions (HEIs) should emphasise KWT, KWO, KWY, and KWN, but it is imperative to note that overemphasis on KHW may result in lower creativity. The results of this study provides significant insights to EE stakeholders and researchers to recognise that the EE, CRT, and ECO relationships need to be examined further. The current study contributes mainly to the current literature on how CRT mediates the relationship between all of the components of EE and ECO, especially in the Nigerian context where such studies are sparse. The study recommends strategies and practical road map for effective delivery of EE courses in line with global best practice. Lastly, limitations of the current study and avenues for future research were discussed.

Keywords: entrepreneurship education; entrepreneurial career option; creativity; polytechnics; northwestern Nigeria.

Acknowledgement

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List of Abbreviations

AVE	Average Variance Extracted
CMB	Common Method Bias
CMV	Common Method Variance
CRT	Creativity
DV	Dependent Variable
EC	European Commission
ECO	Entrepreneurial Career Option
EE	Entrepreneurship Education
EI	Entrepreneurial Intention
ESE	Entrepreneurial Self-Efficacy
F2	Effect size
FGN	Federal Government of Nigeria
FME	Federal Ministry of Education
GBSN	Global Business Network
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GoF	Goodness of Fit
HC	Human Capital
HCT	Human Capital Theory
HEIs	Higher Education Institutions
HND	Higher National Diploma
IFC	International Finance Corporation
ILO	International Labour Organisation
IV	Independent Variable
KHW	Know-how
KWN	Know-when
KWO	Know-who
KWT	Know-what
KWY	Know-why

MENA	Middle East and North Africa
MV	Mediation variable
NBS	National Bureau of Statistics
NBTE	National Board for Technical Education
NCCE	National Commission for Colleges of Education
ND	National Diploma
NHCT	Nicholas Holt Creativity Test
NIRP	Nigerian Industrial Revolution Plan
NPC	National Population Commission
NUC	National Universities Commission
NVC	New Venture Creation
PhD	Doctor of Philosophy
PLS	Partial Least Square
Q2	Construct cross-validated redundancy
R2	R-squared values
SEM	Structural Equation Modelling
SPSS	Statistical Package for the Social Science
TPB	Theory of Planned Behaviour
UIS	UNESCO Institute of Statistics
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USA	State of America United
VIF	Variance Inflation Factor
WBG	World Bank Group

CHAPTER ONE

INTRODUCTION

1.1 Background

Entrepreneurship is gradually and increasingly becoming pivotal for economic development through the medium of employment generation, wealth creation, and poverty alleviation (Bakar, Islam, & Lee, 2015; Bukar & Timothy, 2014; Ejiogu & Nwajiuba, 2012; Matlay, 2005; Sheriff& Mufatto, 2015). Entrepreneurship promotes economic and technological development by creating new industries, new markets, and net increase in real productivity of nations (Hisrich, Peters & Shepherd, 2005; Muhammad, Aliyu & Ahmed, 2015; Pérez-López, González-López, & Rodríguez-Ariza, 2016; Udu, 2014; Qosja & Druga, 2015).

Entrepreneurship is now an everyday catchphrase among academics, policy makers, economic analysts, and even students (Keat, Selvarajah, & Meyer, 2011). It is now being relied upon as a panacea to economic and social problems for both developed and developing nations (Adegun, 2013; Efi & Akpan, 2012; Basu & Virick, 2008; Bukar & Timothy, 2014; Sondari, 2014). It is considered as a motivating force behind economic, social progress, productivity, and innovation (Iglesias-Sanchez, Jambrino-Maldonado, Velasco, & Kokash, 2016).

Also, entrepreneurship is progressively being regarded as an excellent economic development strategy that is capable of promoting a country's economic growth as well as sustaining a nation's competitiveness in the face of increasing trends of globalization (Oghojafor, Olayemi, Okonji, & Olayiwola, 2011; Perez-Lopez,

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Gonzalez-lopez, & Rodriguez-Ariza, 2016; Harvard Schaper & Volery, 2004). In addition to being an excellent economic development strategy, it is equally significantly important to a country, society, as well as individuals alike (Westhead & Matlay, 2005; Harvard Schaper & Volery, 2004). Consequently, entrepreneurship has emerged as the strongest force driving the economies of both developed and developing nations and accounts for the difference in development among nations, as well as the most sought-after career option among youth and graduates (Sieger, Fueglistaller, & Zellweger, 2016). Likewise, the innovative activities among countries are attributable to differences in entrepreneurial activities (Daze, 2013; Global Entrepreneurship Monitor (GEM), 2006; Sanchez, 2013).

Therefore, it has been postulated that interests in relation to entrepreneurship will continue to increase in the future times due to increasing need for courses aimed at creating opportunities for job growth through the creation of new business ventures (Lackeus & Middleton, 2015; Rasmussen, Mosey, & Wright, 2014; Rasmussen & Soheim, 2006). The emerging economies, governments, as well as sectors and institutions have acknowledged the need for the promotion of entrepreneurship as a prospective career option, an urgent need for teaching skills that would support businesses as a competitive advantage (Davey, Plewa, & Struwig, 2011).

Additionally, initiating entrepreneurship as a career option is important for enhancing economic growth, creation of wealth, the creation of new industries, and provision of employment opportunities as well as being a pillar for socioeconomic adjustment of nations (Ahmad, 2013; Salami, 2011). In this context, it was posited that an

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individual self-employment decision or decision to be an employee of an existing organisation is value maximization behaviour on a career option (Douglas & Shepherd, 2000; GEM, 2008).

Furthermore, the current economic environment in Nigeria has made jobs to be sparse and difficult to find, which compels many graduates to opt for entrepreneurial career option, henceforth (ECO) rather than pursuing traditional employment paths (Yarima & Hashim, 2016). As such, youths in the Middle Eastern and North African (MENA) countries are also active in the process of creating businesses through ECO. The positive attitudes towards the ECO made self-employment the most common and attractive source of income and means of livelihood for the youth and graduates (Burger, Mahadea, & Neil, 2004; Kim-Soon, Ahmad, & Ibrahim, 2014; Stevenson, Daoud, Sadeq, & Tartir, 2010; GEM, 2009, regional report).

ECO is a choice among other available career options (Fatoki, 2014). Previous literature describes ECO as synonymous to self-employment (Kenney & Mujtaba, 2007; Levenburg & Schwarz, 2008; Salimath & Cullen, 2010; Verheul, Thurik, Grilo & Van Der Zwan, 2012). ECO or self-employment career option is contributing more significantly to job creation and wealth creation. Likewise, it serves as an instrument of poverty reduction in the most of African countries, more so in Nigeria which is indisputably the most populated African country (Adekiya & Ibrahim, 2016; Baba, 2014; British Council Nigeria, 2012; Salami, 2013; & Sani, Ugbede, & Usman, 2011). ECO as a viable career option in Nigeria serves as a key driver towards supporting the young people from the family and the community (Adebayo,

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2013; Bignotti, 2013; Chigunta, Schnurr, James-Wilson, Torres, & Creation, 2005; Douglas & Shepherd, 2002; Pihie & Akmaliah, 2009).

Similarly, ECO has been advocated by successive leaders in Nigeria as an instrument of promoting economic independence among youth through self-employment (Adekiya & Ibrahim, 2016; Beeka & Rimmington, 2011; Buang, 2011; Bukar & Timothy, 2014; Salami, 2013). Additionally, in Nigeria, self-employment through ECO offers youths and graduates of higher education institutions (HEIs) opportunities to choose entrepreneurship as their life's career path. It is also indicated that entrepreneurship is an option which reduces the rate of unemployment and the social tribulations associated with it not only Nigeria, but also in most other parts of the world (Adekiya & Ibrahim, 2016; Bukar & Timothy, 2014; Fatoki, 2014).

Moreover, educational initiatives have shown high potentials to increase the supply of prospective entrepreneurs globally (Hytti & Kuopusjarvi, 2004; Nabi & Holden, 2008; Sanchez, 2013; Van der Walt & Van der Walt, 2008). By implication, the medium of education remains an avenue for creating awareness to people about new opportunities to create business ventures through the promotion of entrepreneurship as a legitimate career path option (Donckels 1991; Kantor 1988; GEM, 2011; Salami, 2013; Thompson & Kwong, 2015).

Recently, entrepreneurship education (EE) has been widely accepted as an instrument that empowers individuals in the acquisition of entrepreneurial values, skills, and attitudes (Asghar, Hakkarainen, Nada, 2016; Mwasalwiba, 2010;

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Mwasalwiba, Dahles, & Wakke, 2012; Valerio, Parton, & Robb, 2014). EE leads to changes in behaviour, making youth choose entrepreneurial career path after graduation, thereby becoming independent and self-reliant as well as to developing a capacity to be potential employers of labour instead of waiting to be employed by others (Akpan & Etor, 2013; Onyilofor, 2014). As such, one of the goals of higher education (HE) is to promote the acquisition of intellectual and physical skills to enable an individual to be a responsible and self-reliant member of a society (Ogbonna, 2015).

Similarly, in Nigeria, EE is aimed at promoting an entrepreneurial career as a viable substitute to wage employment among Nigerian youth and graduates (Ejiogu & Nwajiuba, 2012; & Onyilofor, 2014). EE attempts to reverse graduate unemployment trend by giving the desired entrepreneurial skills through training for business venture formation as a viable career path option (Jack, Dodd, & Anderson, 2008; Daze, 2013; Ekpoh & Edet, 2014). Equally, EE in Nigeria creates and increases awareness and positive behaviour towards entrepreneurship and new business venture formation as a viable career option (Ejiogu & Nwajiuba, 2012; Onyilofor, 2014; Pfeiffer, Oberman-Peterka, & Jeger, 2008). Additionally, EE has impacted on individuals' attitudes of Nigerian students and youths' willingness to perform entrepreneurial behaviours by embracing the ECO (Arensburg, 2015; Chigunta, 2002; Henry, Hill, & Leitch, 2005; Potter, 2008; Volery & Mueller, 2006).

Furthermore, in an attempt to realize these lofty goals, EE and training were introduced into Nigerian polytechnics/monotechnics with the aim of imparting

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entrepreneurial skills and knowledge to the students (National Board for Technical Education (NBTE, 2008). Also, EE seeks to make a positive contribution towards improving the entrepreneurial orientation of the students (Ogundele, Akingbade, & Akinlabi, 2012). This approach increases the students' technical innovation and creativeness for further learning (NBTE, 2004).

Nevertheless, EE is aimed at developing the basic components of knowing what, how, who, why, and when competencies with a view to choosing entrepreneurship as a career option. Meanwhile, EE has components which include: know-what, know-how, know-who, know-why, and when competencies (e.g. Asghar et al., 2016; Fayolle & Gailly, 2013; Isah & Hashim, 2017; Othman & Nasrudin, 2016).

However, problems inherent in EE emerged in Nigeria which prevents the traditional function of changing the attitudes and mindsets of students to the extent that graduate unemployment and poverty persist at an increasingly unprecedented level (Abdulrahman, 2014). The resultant effects are the emergence of socio-economic problems (prostitutions, armed robbery, political thuggery, kidnappings, hostage taking, oil bunkering, oil pipe vandalisation, substance abuse, religious fanaticism, and cultism) among the Nigerian youth graduates (Adawo & Atan, 2013; Akinyemi, 2013; Kenechukwu, 2015).

Moreover, previous empirical studies have found a positive relationship among components of EE courses and ECO (Eesley & Wang, 2014; Hoang & Antoncic, 2003; Smith, Matthew, & Schenkel, 2009; Muofhe & du Toit, 2011; Pruett, 2012).

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Essentially, know-what component is considered as the most fundamental part of the entrepreneurship courses in Nigeria which inculcates skills and or techniques used to build an acceptable knowledge of EE (Ismail & Ahmed, 2013; Rae & Woodier-Harris, 2013, Sondari, 2014). Knowledge is benefitial to an individual's career (Bakar et al., 2015; Hoe et al., 2014; Sofoluwe, Shokunbi, Raimi, & Ajewole, 2013; Ogbonna, 2015) but, the delivery of know-what EE is hampered by ineffective curriculum which widens unemployment of the youth graduate in Northwestern Nigeria (Abdulrahman, 2014; Maina, 2014; Musa & Adewale, 2015).

Notwithstanding, previous scholars have offered various reasons for the non-performance of EE despite its potentials for changing students' mindsets and imparting entrepreneurial skills towards eradicating unemployment among youth and graduates. As a field of study, EE discipline has been criticised by scholars as lacking academic integrity (Fayolle, 2006; Fayolle & Gailly, 2006), and that policymakers and politicians are sceptical about investing in it because there is no tangible return on investments despite vast sums of money expended. Others argued that the discipline lacks accepted paradigms, theories, publications, and insufficient PhD programmes (Alberti, Sciascia, & Poli, 2004; Blenker, Korsgaard, & Thrane, 2011; Matlay, 2006; Mwasalwiba, 2010). Others still explain that the insufficiency of meaningful results from EE programmes arise from the simple fact that EE programmes are mostly at its adolescent or emerging stages (Garava & O'Cinneide, 1994; Henry et al., 2005; Jones & Iredale, 2010; Katz, 2003; Kuratko, 2005).

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1.1.1 Unemployment in Nigeria

Unemployment is not peculiar to Nigeria but an issue of global concern, especially among the less developed and the emerging economies (Adebayo, 2013; Adesina, 2013; Kew, Herrington, Litovsky, & Gale, 2013). The International Labour Organisation (ILO, 2016) reported that global unemployment would persist and that unemployment was estimated at 197.1 million people in 2016, 199.4 in 2017; and 200.5 million people in 2018 (World Employment and Social Outlook-Trend 2016). Likewise, in sub-Saharan Africa, unemployment was estimated at 71 million people in 2017, implying a continued increase in the vicious cycle of unemployment, underemployment, and poverty among the populace (ILO, 2017).

Nigeria's population is estimated at 198 million people (NPC, 2018) which is the highest in Africa (UN, 2015), 60 per cent of youths are under the age of 24 years. It is currently the 40th biggest economy in the world ranking and aspires to become one of the 20 most influential economies by the year 2020 (ILO, 2011). The National Bureau of Statistics (NBS, 2018) revealed that unemployment rate in Nigeria as at the third quarter of 2017 stood at 18.8 per cent and total unemployed and underemployed were 40.0 per cent during the same period.

Graduate unemployment in Nigeria was described as a time bomb (Adawo, 2013; Akinyemi, Ofem, & Ikuenomore, 2012; Ogundele & Egunjimi, 2017; Olorundare & Kayode, 2014; Onuma, 2016). A survey by jobberman.com indicates that about 45 per cent of Nigerian graduates are unemployed (Guardian, 2016). Recently, the Federal Ministry of Education (FME) survey revealed that 53 per cent of Nigerian

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graduates are unemployed, 30 per cent are underemployed, while only 3 per cent are self-employed. Other studies report worse unemployment situations among Nigerian graduates. Others report worse situations that only about 10 per cent of Nigerian estimated one million graduands secure paid employment annually (Innocent, 2014; NBS, 2012; Odey & Okoye, 2014).

Unemployed graduates are often unhappy, miserable, and restless with a negative effect on the economy which ultimately impede the country's development (Adebayo, 2013; Adesina, 2013; Salami, 2013). Consequently, unemployment among graduates of HEIs creates indolence and frustration leading to their involvement in socio-economic problems such as prostitution, armed robbery, oil pipe vandalisation, oil bunkering, substance abuse, kidnappings, hostage-taking, rape, religious insurgency, etc. (Aikhuemonkhan et al., 2013; Maina, 2014; Ogbonna, 2015).

In Nigeria, unemployment is attributed to so many causes; including the non-performance of the industrial sector due to inadequate infrastructure, low capacity utilisation by industries, capital flight, the effect of privatisation and commercialisation of public parastatals, downsizing and rightsizing as a result of economic recession, and the effect of globalisation (Abdurrahman, 2014; brown, 2012; Maina, 2014). Likewise, in the educational sector, enrolments into HEIs have soared without a corresponding increase in learning infrastructure, leading to large numbers of graduands skills mismatch (Innocent, 2014; Shu'ara, 2010).

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In the Nigerian context, the neglect of ECO as a career option by graduates was attributed to so many causes in which all the stakeholders play significant roles. The most prominent factors militating against successful EE programmes in Nigerian HEIs include among others; general inadequate funding of EE programmes (Agbonlahor, 2016; Nwafor & Nwachukwu, 2012; Nwekeaku, 2013; Ojo, Abayomi, & Odozi, 2014; Olorundare & Kayode, 2014; Undie, Sule, & Bassey, 2012); paucity of trained manpower, poor curriculum development and implementation (Agbonlahor, 2016; Amoor, 2008; Brown, 2012; Ojo et al., 2014; Olorundare & Kayode, 2014); poor planning supervision and evaluation (Brown, 2012; Ojo et al., 2014). Other problems are: inadequate teaching materials, inadequate infrastructural facilities; effects of globalisation and information technology on curriculum, methodology, staff, and equipment (Abdulrahman, 2014; Maina, 2014; Efi, 2014).

Furthermore, some scholars blamed the failure on the low motivation for teaching and non-teaching staff which affects their emotion, efficiency, and creativeness; overemphasis on theoretical knowledge rather than practical knowledge due to the absence of EE centres; and high level of corruption and poor maintenance culture (Brown, 2012; Unachukwu, 2009). Equally, some scholars blamed the failure on technological abuse; infrastructural decay, political unpredictability and insecurity (e.g., Maina, 2014; Ojo et al., 2014; Nwafor & Nwachukwu, 2012). Other studies cited poor societal attitudes to technical and vocational education, lack of data on education, the absence of proactive regulatory environment as the possible causes of failure (e.g., Ayatse, 2013; Brown, 2012).

Notwithstanding, the World Bank reports that Nigeria can use its creative potentials as a veritable tool for enhancing the business sphere as a solution to the youth graduate unemployment regarding all the components of EE and ECO (World Bank-IFC, 2013). Scholars like Muhammad et al. (2015) posit that Nigerians are one of the most creative and talented people in black Africa. Precisely, it indicates that creativity as the act of generating ideas that are novel and useful can be used to enable students to be more innovative. Thus, students' creative potentials can help them to identify business opportunities and create businesses to exploit such opportunities (Amabile, 1996; Marks & Huzzard, 2008; Okpara, 2014; Oldham & Cummings, 1996; Shelley & Zhou, 2008).

Based on the recommendations of Baron and Kenney (1986) and some specific recommendation of prior scholars, the inclusion of a mediator variable is necessary to mediate the relationship between the exogenous and the endogenous constructs (Preacher & Hayes, 2004; 2008). Also, specific recommendations of prior scholars suggest that creativity will potentially mediate the relationship between the study constructs (Berglund & Wennberg, 2006; Ofole & Ezeokoli, 2014; GBSN, 2013; Hamidi et al., 2008).

Previous scholars indicate that creativity is an important determinant of organizational performance, long survival, and prosperity (Anderson, Potocnik, & Zhou, 2014). Creativity is an action that makes one to observe things every other person sees but associating them in a way that no other person has done before (Amabile, 1996). Recently, creativity literature suggests that it is not a fixed nor trait-

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like quality of a persons, rather, a skill that can be taught, learned, practiced, and as well as be improved (Amabile & Pillemer, 2012). Therefore, this study considers creativity as mediator as it has become indispensable to entrepreneurship. Hence, the study examines the effect of creativity on the relationship between components of EE and ECO in the Nigeria context. Based on this, this study formulated the following statement of the problem.

1.2 Statement of the Problem

The GEM (2013) survey report confirmed Nigeria as an entrepreneurial nation and youth graduates of Nigeria's HEIs perceive opportunities in entrepreneurship and declare their willingness to utilise their knowledge of EE to create new business ventures in order to be self-reliant. The report further indicated that 64 per cent of Nigerian youths between the ages of 18 and 34 years constitutes almost 70 per cent of HEI graduates having EE potentials concerning know-what, know-who, know-how, know-why, and know-when on ECO. Likewise, Nigeria is endowed with favourable climatic conditions with abundant resources. Nigerian youths and graduates can utilise these potentials to engage in local, national, or international businesses as a career option. Despite these potentials, inadequate knowledge and ill-conceived perception of EE among HEI graduates in Nigeria remain a serious problem leading to their unemployment situation (Adawo & Atan, 2013; Musa & Adewale, 2015). Figure 1.1 shows a steady increase in the rate of unemployment in Nigeria from 2010 to 2017.

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Nigeria's Unemployment Rate (%)

Figure1.1: Unemployment Trends in Nigeria
Source: National Bureau of Statistics (2018)

Therefore, the fundamental objective of EE regarding the transfer of competencies including; know-what, know-how, know-who, know-why, and know-when is challenged. The students' unwillingness to stick to ECO stems out of the ineffectiveness of the EE courses in influencing the knowledge, skills, and attitudes of students to entrepreneurship as an ideal career option (Isah & Hashim, 2018; Kozlinska, 2012; Sanchez, 2013).

Notwithstanding the influence of know-what competency on the students' ECO among HEIs in Nigeria, knowledge of know-what is hampered by general inadequacy of qualified EE lecturers in the various institutions of learning (Amoor, 2008; Ojo, Abayomi, & Odozie, 2014). These problems that remain as impediments to EE learning which are rooted in the poor performance of lecturers, to some extent, handicapped the EE courses. This is because imparting knowledge of know-what competency requires qualified personnel and higher technical facilities to deliver the

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courses. Similarly, students do not pay attention to the entrepreneurial learning process (Pihie & Bagheri, 2011).

Likewise, EE know-how is considered to be essential skills and techniques required for successful entrepreneurial practices (Ogbonna, 2015; Sondari, 2014; Ulvenblad, Berggren, & Winborg, 2013). Despite the role of EE know-how in accelerating ECO and an ability to reflect and identify opportunities to create new products' market, and risks evaluation in the process of entrepreneurship; the issue of poor infrastructural facilities is becoming a threat to the delivery of the courses (Ayoola, Amosun, & Olusola, 2011; Ngwoke, Oyeoku, & Obikwelu, 2013).

Similarly, know-who competency refers to social interaction (Johannisson, 1991; Souitaris, Zerbinati, & Al-Laham, 2007). This competency aims to impart social and networking skills to the learners in the context of business creation and social network development. Social networking skill is the social ability to interconnect and collaborate with different kinds of professionals and persons (Lundvall, 1998; Raichaudhuri, 2005). However, the constraints of information on crucial entrepreneurial role models hinder the development of positive entrepreneurial mindset among graduates (Brown, 2012; Yatu, Loon, & Bell, 2016). Hence, EE courses in HEIs in Nigeria suffer from lack of patronage and non-availability of role models and referents to the extent that unemployment persists (Maina, 2014; Nwafor & Nwachukwu, 2012).

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Also, know-why competency is the attitudes, values, and motivation of the learners for EE (Middleton & Donellon, 2014). Specifically, prior studies have found significant positive associations between know-why and ECO (Johansen, 2013; Linan, Rodriguez-Cohard, & Kueda-Cantuche, 2011; Vinogradov, Kolvereid, & Toneshenko, 2013). Know-why seeks to answer questions as to the existence of entrepreneurship; why businesses are started, why study entrepreneurship and what are the benefits of entrepreneurship. Teaching know-why among students of HEIs is challenged by distorted role of mentors and role models which result in low level of risk-taking propensity (Ogundele et al., 2012; Okoye & Eze, 2010).

Similarly, know-when competency is crucial to business start up emergence. Know-when is an essential element in opportunity discovery and opportunity exploitation. Notwithstanding, many studies also revealed a positive relationship between know-when and ECO (e.g., Ayoola et al., 2011; Baron, 2004; Lee, Chang & Lim, 2005; Shane & Venkataraman, 2000). Though researches have shown the significance of cognitive abilities to transform into behaviours as students in HEIs recognise opportunities, there no sufficient empirical evidence to show a clear relationship between individuals' behaviour, problem-solving ability, and opportunity identification (Kim, Choi, Sung, & Park, 2018).

Essentially, prior works of literature have suggested for more research on the link between EE, creativity, and entrepreneurship (Hamidi, Wennberg, & Berglund, 2008; Lourenco & Jayawarna, 2011; Global Business Network (GBSN), 2013; Ofole & Ezeokoli, 2014; Nabi et al., 2006; Shane & Nicalaou, 2015; Wennberg, Hamidi,

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Panasenco, Stanaityte, 2004). Creativity is an innate competence in every human being; a mental process which makes possible the the production of novel concepts and ideas that are useful, practicable, and appropriate (Marks & Huzzard, 2008; Okpara, 2014). It is a fundamental aspect of innovation. Stuides show that creative students have higher intentions of starting a business in the future (Kusmintarti, Asdani, & Riwajanti, 2017).

Therefore, Northwestern Nigerian polytechnic students' unwillingness to engage in ECO is an issue of grave concern with both theoretical and practical justifications. Empirical investigations are required considering the role entrepreneurship in employment generation, wealth creation, and poverty alleviation. Thus, in line with the suggestions by previous studies, creativity will potentially mediate the relationship between EE and entrepreneurship.

1.3 Research Questions

The study is aimed at providing answers to the following research questions:

1. Is there any relationship between components of entrepreneurship education (EE) and entrepreneurial career option (ECO) among polytechnic students in Northwestern Nigeria?

2. Is there any relationship between components of entrepreneurship education and creativity among polytechnic students in Northwestern Nigeria?

3. What is the mediating effect of creativity on the relationship between components of entrepreneurship education (EE) and entrepreneurial career options (ECO) among polytechnic students in Northwestern Nigeria?

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1.4 Objectives of the Study

The study aimed at investigating the relationship between EE and ECO among polytechnic students in Northwestern Nigeria. It would also seek to determine the extent to which creativity mediates the relationship between components of EE and ECO among students. Specifically, the study will seek to:

1. To examine the relationship between components of entrepreneurship education (EE) and entrepreneurial career option (ECO) among polytechnic students in Northwestern Nigeria.

2. To examine the relationship between components of entrepreneurial education and creativity among polytechnic students in Northwestern Nigeria.

3. To examine the mediating effects of creativity on the relationship between components of entrepreneurship education (EE) and entrepreneurial career option (ECO) among polytechnic students in Northwestern Nigeria.

1.5 Significance of the Study

The study is significant in many ways. The study would contribute to our understanding of entrepreneurial behaviour by showing the mediating effect of creativity on the relationship between EE and ECO among polytechnic students in the Northwestern geopolitical zone of Nigeria. It would fill a research gap as the role of creativity in EE needs further examination.

Furthermore, the study would add to the body of knowledge on ECO literature by adding creativity as a mediator which other studies have failed to reflect. Also, the

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study area is yet another contribution as the study would be tested in Nigeria, Africa as against previous studies that were examined in other parts of the world. Prior studies on the relationship between the variables were performed in developed countries (Abuzhuri & Hashim, 2017; Abuzhuri & Hashim, 2017b; Beeka & Rimmington, 2011; Fatoki, 2014; Hoang & Antoncic, 2003; Muofhe & du Toit, 2011; Pruett, 2012; Smith et al., 2009). Therefore, investigating in Nigeria would add to our understanding as to whether the measuring instruments would still be relevant in other contexts, different from that of the developed countries.

Moreover, it would assist policymakers, particularly in Nigeria to design policies and programmes in line with contemporary needs of the northwest geopolitical zone and Nigeria in general. Fundamentally, EE courses were introduced in Nigeria and made compulsory at all levels of education with the aim of reducing the increasing rate of graduate unemployment, stimulating wealth creation, and poverty reduction (Abdulrahman, 2014; Bakar et al., 2015; Maina, 2014; NBTE, 2008; Ogbonna, 2015). The study would help to determine the extent to which these lofty objectives were achieved in the Nigerian context. Again, the FME would benefit immensely from the outcome of the study, especially in the area of curriculum development and dissemination (Adawo, 2013; Dandago & Muhammad, 2014). Furthermore, the study would help the FGN in designing EE policies and programmes through HE regulatory agencies, i.e. NUC, NBTE, and NCCE. The research would as well help institutions of learning to determine the EE potentials of individual students rather than spending its little resources on educating individuals who lack the necessary creative and innovative abilities or potentials to create something new or add value to

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existing products or services. That is, to avoid a 'one-size-fits-all' sydrome which is tricky (Hamidi et al., 2008).

Equally, this study would provide empirical evidence on the relationship between components of EE, creativity, and ECO of polytechnic students in Northwestern Nigeria in particular and Nigeria in general. Both staff and students of HEIs, as well as education regulatory agencies, would benefit from the outcome of the study. The various levels of government such as federal, states, and local governments also stand to gain tremendously from the result of this study, concerning social and education policy enactments (Abuzhuri & Hashim, 2017; Isah & Hashim, 2017; Yarima & Hashim, 2016).

Equally, the survey adds to the stock of literature on entrepreneurship and immensely beneficial to the academic community by enhancing their knowledge and understanding concerning the variables under investigation within the Nigerian context. The research serves as a guide to HEIs on what is essential to their overall performance. Also, the study serves as a frame of reference to students and other stakeholders in areas of future research. Finally, it helps by making relevant recommendations to the different stakeholders who would help towards injecting entrepreneurial spirit in students thereby stimulating them to choose entrepreneurship as their ultimate career path option (Beeka & Rimmington, 2011; Ekpo & Edet, 2011). Hence, this research is significant to both public and private organisations on EE in relations to ECO among youths and graduates.

Equally, most previous studies on the impact of EE on students' ECO used intention as the dependent variable (Bae et al., 2014; Fayolle & Gailly, 2015; Souitaris et al., 2007; Raposo & Do Paco, 2011; Westhead & Solesvik, 2016; Wu & Wu, 2008). This study, however, shifts emphasis from intention to action (from EI to entrepreneurial activity) by examining the actual entrepreneurial process of new venture creation referred to here as ECO. Essentially, ECO is a shift from intention to actual behaviour because of the weakness of intention as a dependent variable as the distinction between doers and dreamers may be difficult to make (Autio et al., 2011; Hamidi et al., 2008; Nabi et al, 2010).

Similarly, prior studies of EE pay more attention to other geopolitical zones of Nigeria; such as North-East, North-Central, South-East, South-South, and South-West geopolitical regions (Adesia, 2013; Chikere & Mayowa, 2011; Iro-Idoro, Ayodele, & Jimoh, 2015; Olatoye et al., 2010). This study examines EE in North-West geopolitical zone of Nigeria which previous studies did not address.

Equally, previous studies on the relationship between EE and ECO examined university students, whereas polytechnic students are more inclined to ECO. Polytechnic students are more inclined to practice, while their university counterpart students are more grounded in theory (e.g., Bukar & Timothy, 2013; Idogho & Augustine, 2011; Olatoye et al., 2010). Essentially, this study adds to the volume of literature on EE among polytechnic students in the Northwestern geopolitical zone in particular, and Nigeria in general.

In a nutshell, this study fills two main research gaps in predicting ECO; investigating the relationship between components of EE and ECO, and investigating the mediating role of creativity on the relationship between EE and ECO among polytechnic students in Northwestern Nigeria. To the researchers' best knowledge, few studies were found in the literature regarding the relationship between EE and ECO in Northwestern Nigeria. Similarly, the researcher did not come across any literature on the relationship between all the components of EE, creativity, and ECO in a single framework. Creativity as a mediator suggests that students' creativity dispositions to a large extent determine their choice of ECO as a career path option (Isah & Hashim, 2017; Yeng-Keat et al., 2015).

1.6 Scope of the Study

The study links creativity to EE and ECO among students of polytechnics in Northwestern Nigeria. It investigates the role of EE through training on ECO among polytechnic students in Northwestern Nigeria and gains some insight into whether students who participated in EE courses and that are creative are more likely to take up a career in entrepreneurship as a career than those who are not. The study concentrates on students of polytechnics in the Northwestern part of Nigeria only. Therefore, students from sister tertiary institutions in Northwestern Nigeria, such as universities, colleges of education, and other specialized institutions were not part of the study. Specifically, the research studies students undertaking courses of study leading to the award of HND in all polytechnics situated at the Northwestern geopolitical zone of Nigeria. Hence, the study population consists of final year HND students of all programmes. It is believed that this category of students must have

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taken courses on EE and have been examined in them during their National Diploma (ND) programmes as well as their first year of HND programme.

1.7 Overview of Nigeria and the Northwest Region

Nigeria is formally divided into six regional zones; Northeast, Northwest, North-Central, South-East, South-West, and South-South. These regions are divided by varying climatic conditions and ecologies, as well as differing population characteristics. Nigeria is a member of both the Commonwealth of Nations and African Union (KACCIMA, 2012). Nigeria is the strongest of the economies in sub-Saharan Africa and heavily dependent on oil for government revenue and foreign exchange earnings. Nigeria's Gross Domestic Product (GDP) estimates were $493.8, $405.4, and $376.3 billion for 2015, 2016, and 2017 respectively (World Economic Outlook (WEO, 2018). With a labour force of 60.08 million (Central Intelligence Agency World Factbook, 2018), Nigeria is among the 30th largest economy in global ranking and aspires a position among the top 20 high impact economies in the world by the year 2020 (Kano State Investors Handbook, 2013).

1.7.1 A Brief on the Federal Republic of Nigeria

As a federation, Nigeria is a republic comprising 36 states. It is a member of West Africa. Nigeria comprised of about 500 ethnic groups and the major ethnic groups with approximate percentage distribution is; Hausa/Fulani (29 percent); Yoruba (21 percent); Igbo (18 percent); Ijaw (10 percent); Kanuri (4 percent); Ibibio (4 percent); Tiv (3 percent); and other small tribes constitute 11 percent of the entire population (Shu'ara, 2010). Nigeria has an estimated population of over 198 million (National

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Population Commission (NPC, 2018), 47 per cent of West Africa's population, and the 7th largest population in the world. With a population growth rate of 2.8 per cent per annum, Nigeria is expected to climb the number three position in the world ranking regarding population by the year 2050, with an estimated 399 million people (UN, 2015). Nigeria's land area covers about 923,768 sq km, and prior studies regard Nigeria as "the Giant of Africa" (Idoko, 2013; Nelson & Nelson, 2010).

Nigeria's oil reserves have brought sufficient revenues to the country. Nigeria's oil production in Africa ranks highest and 15th largest oil producer in the world with an estimated capacity of 2.5 million barrels per day. Also, Nigeria is the sixth largest regarding natural gas deposits in the world. At current extraction rate, proven and probable oil and gas reserves in Nigeria will last for more than 50 years and possible reserves well above 100 years. To date, the Nigerian Geological Survey Agency has identified over 34 different minerals for commercial exploitation in Nigeria, and much more other mineral resources have been discovered and are being captured on the mineral commodity maps (Shu'ara, 2010).

Out of the total arable land in Nigeria, only an estimated 40 per cent is currently being cultivated, while 60 per cent is lying fallow. Again, it has a vast reserve of a youthful population. More than 50 per cent of the population is under 18 years of age (NPC, 2006). By implication, Nigeria is not likely to experience labour shortages in the foreseeable future. Currently, short-term problems of accelerating the creation of productive jobs through private sector growth as well as improvements in education and skills confront Nigeria. So far, the efforts towards job creation have been grossly

inadequate, leading to increased frustration among much underemployed Nigerian youths (World Bank, 2015).

Furthermore, the education system in Nigeria manifests in three primary forms; traditional system, Islamic school system, and the formal school system given in primary, secondary schools, and tertiary institutions of learning (universities, polytechnics, and colleges of education). Figure 1.2 shows the political map of Nigeria indicating the six geopolitical zones.
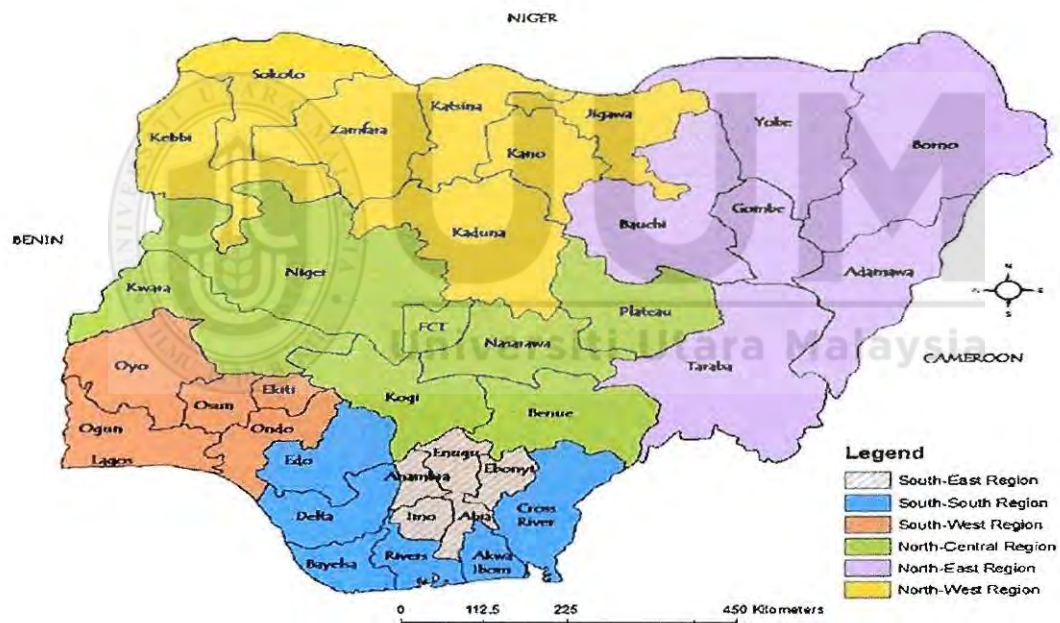
Figure 1.2: *Map of Nigeria showing six geopolitical zones*
Source: Adapted from Ogundiran, 2006.

The FGN has established agencies under the FME that are vested with the responsibility of regulating and funding tertiary education in Nigeria. These are the National Universities Commission (NUC) for university education, National Board

for Technical Education (NBTE) for polytechnics, and National Commission for Colleges of Education (NCCE) which regulates colleges of education across the country. Polytechnics in Nigeria are established to provide middle-level manpower to the economy (NBTE, 2016). The NBTE is responsible for regulating polytechnic and other technical institutions in Nigeria. It regulates technical education at post-primary and tertiary levels, involving state, federal, and private owned institution. Table 1.1 shows the distribution of polytechnics in Nigeria based on ownership among federal, state, and privately owned.

Table 1.1
Tertiary Institutions in Nigeria as at 5/10/2015

Type of institution	Number available			
	Federal	State	Private	Total
Universities	40	39	61	140
Polytechnics	28	41	31	100
Monotechnics	31	26	3	60
Colleges of education	21	43	21	85
Polytechnics (Federal and state offering NCE programmes	2	7	-	9

Source: Federal Ministry of Education, 2015.

Accordingly, the board has a total of 469 technical institutions under its supervision as shown in Table1.2. As at 2017, there are 103 polytechnics owned by federal, state, and private individuals. It is noteworthy, however, that only 11 out of the 103 polytechnics are located in the Northwest zone, despite the fact that the Northwest zone is the most populous geopolitical zone in the country. Currently, there is no private polytechnic operating in any part of the Northwest zone. Thus, the Northwest

zone is one of the most educationally backward regions, only next to the Northeast

zone which was devastated by the activities of insurgents (e.g., Boko Haram).

Table 1.2
Technical and Vocational Institutions in Nigeria.

S/No	Institution Type	Ownership			Total
		Federal	State	Private	
1.	Polytechnics	25	40	38	103
2.	Colleges of Agriculture	19	16	0	35
3.	Colleges of Health Sciences/specialized institutions	38	11	3	52
4.	Innovation Enterprise Institutions (IEIs)/Vocational enterprise institutions (IEIs)	0	0	147	147
5	Technical Colleges	19	110	3	132
	Total	101	177	191	469

Source: NBTE, 2016.

1.7.2 North Western Nigeria

The North-West geopolitical zone of Nigeria comprised of seven states, namely;

Jigawa, Kano, and Kaduna, Katsina, Kebbi, Sokoto, and Zamfara states. These states

are endowed with fertile agricultural land and abundance of natural resources. Its

vast population is predominantly subsistent farmers. The Northwest geopolitical zone

is well known for the production of cotton, groundnuts and a major supplier of

cotton, gum Arabic, as well as hides and skin to the international market. The

Northwestern region of Nigeria has a well-established trading link with north and

central Africa even before colonization (Walther, 2014). In addition, other varieties

of crops produced include millet, beans, maize, sugarcane, potatoes, wheat, guinea

corn, sorghum and cowpeas, yam, tobacco, maize, ginger, rice, cassava, vegetables,

mango, cashew, guava, and pawpaw. These are grown especially within the plains of

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the Sokoto-Rima River Basin, which also supports a large fishing industry such as the Argungu fishing festival (Oluigbo, 2011).

The inhabitants of Northwestern Nigeria are predominantly Muslims and have a relatively homogenous cultural background. They are mainly Hausa/Fulani extraction with a little mixture of Gwari, Dakarkari, and Kambari, Zabarma along Kaduna and Kebbi axis. Individually, there are commonly found mineral resources in this region including; asbestos, amethyst, gold, rutile, sand, gold, uranium, marlstones, serpentine. Also, available mineral resources for commercial exploitation are potash, copper, white quartz, chamosite, limestone, and antimony. The region supports vibrant leather works, dyeing and other forms of textiles, etc. The manufacturing, communication, and mining of mineral resources in Nigeria are still in their infancy and have potentials to be exploited by Nigerians (Araba, 2012; Mukhtar, 2013). Educationally, Northwestern Nigeria is one of the educationally disadvantaged geopolitical zones of Nigeria regarding western education. But, the zone has long-established contact with Islamic civilisation as such well-grounded in Islamic education system (Adamu, 2010).

1.8 Definitions of Terms

There are a number of key terms used in the conduct of the study. The definitions of terms used in the study were based on previously conducted researches.

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1.8.1 Entrepreneurial career option

Entrepreneurial career option (ECO) is a conscious and planned resolution by an individual to start one's own venture as a career path (Krueger, Reilly, & Carsrud, 2000). Likewise, Yarima and Hashim (2016:77) defined ECO as "a conceptual process that orients the persons decision to turn into entrepreneurship as a career choice". Also, ECO is seen as an individual's deliberate decision and total commitment to embrace entrepreneurship as a career option (Bignotti, 2013). It is also described as a deliberate and premeditated attempt by an individual to choose entrepreneurship as a life career (Perez-Lopez et al., 2016). In this study, however, ECO refers to an individual's cognitive resolve to organise and marshal resources to create a new entrepreneurial venture as an alternative career option. It is a decision to create a new venture to exploit entrepreneurial opportunities.

1.8.2 Entrepreneurship Education

Entrepreneurship education (EE) is defined as the process of providing individuals with the capacity to recognise commercial opportunities and the knowledge, skills, and attitudes to act on them (Acs & Storey, 2004). In the views of Olorundare and Kayode (2014), EE is seen as the education that is so designed as to change the attitudes and orientations of students by imparting skills and knowledge to enable them create and manage a business enterprise. Similarly, EE is defined as "an examination of how, by whom, and with what effects, opportunities to create future goods and services are discovered, evaluated, and exploited" (Shane & Venkataraman, 2000:120). For the purpose of this study, however, EE is considered as the necessary knowledge and skills that prepare the learner to develop a

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favourable mindset towards entrepreneurship and encourage them to choose entrepreneurship as the legitimate career option.

1.8.3 Know-what

Know-what refers to the concepts and knowledge of entrepreneurship. 'Know-what' for the learner means the cognitive knowledge that an individual develops in relation to what to do in order to execute entrepreneurship (Nutley, Walter, & Davies 2003). Also, know-what refers to "what one has to do in order to decide and act in a given situation" (Fayolle & Gailly, 2008:578). Know-what is also described as the entrepreneurial knowledge such as encyclopedic knowledge of entrepreneurial and vocational training (Asghar et al., 2016). Similarly, Middleton and Donnellon (2014) state that know-what knowledge is a general knowledge of entrepreneurship which can be conveyed to the student independently. It refers to the knowledge of what an individual does in the process of creating a new venture. In this study, know-what refers to theoretical knowledge of entrepreneurship.

1.8.4 Know-how

Know-how is knowledge of the process in the course of which entrepreneurial activities are carried out. Know-how is referred to as competencies that can be used in action (Johannisson, 1991:72). It is also referred to as "how to deal with a given situation" (Fayolle & Gailly, 2008:578). It is knowledge regarding how to do something; principally how to do something well. Know-how element emphasises the skills and techniques necessary for entrepreneurial accomplishment (Middleton & Donnellon, 2014). In this study, know-how competencies refer to the competencies

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which enhance an individual's entrepreneurial abilities and skills through the provision of vocational and business skills in the context of business and occupational structures that are complex. For this study, know-how knowledge refers to the technical skills for performing entrepreneurial action.

1.8.5 Know-who

Know-who is the social capability to cooperate and communicate with different kinds of people and experts (Lundvall, 1998, p.417). Similarly, know-who refers to "who are the useful people and which the useful networks are in a given context" (Fayolle & Gailly, 2008: 578). Also, Asghar et al. (2016) described know-who as the educational competency that seeks to impart social networking skills to the students with regards to social network development and production. In this study, know-who competency imparts to students the ability to associate and communicate with significant persons relevant to the entrepreneurial process such as peers, lecturers, guest speakers, local entrepreneurs, etc.

1.8.6 Know-why

Know-why reflects the values and motives of initiating entrepreneurial events and one's attitudes towards the events (Johannisson, 1991). It is "what determines human behaviour and actions, entrepreneurs' attitudes, values, and motivation" (Fayolle & Gailly, 2008). It is an individual's own understanding of why he engages and persists in taking entrepreneurial action. Know-why competencies are the values, beliefs, and motivations for entrepreneurship that are inborn, which can be nurtured and be moulded by the environment (Abuzhuri & Hashim, 2017; Isah & Hashim 2017;

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Johannisson, 1991). Similarly, Middleton and Donnellon (2014) described know-why competency as the knowledge an individual needs in order to understand and legitimize entrepreneurial action. Present study refers to know-why competency as the beliefs, values, attitudes and motivation for entrepreneurial action.

1.8.7 Know-when

Know-when knowledge consists of insights and intuitions (Abuzhuri & Hashim, 2017; Johannisson, 1991; Souitaris et al., 2007). According to Middleton and Donnellon (2014) know-when competency is person-specific. It provides a link between learning stimulants and personal skills through interaction with stakeholders to elicit emotional feelings. Likewise, Lo (2011) describes it as a good competence for opportunity recognition and exploitation. This study considers know-when knowledge as the insight and intuition developed through concrete experience to know the right time to take entrepreneurial action.

1.8.8 Creativity

Creativity is the generation or production of ideas or solutions that are both novel and useful (Amabile, 1996; George & Zhou, 2007; Lourenco & Jayawarna, 2011). It is described as the production of something that is useful and original (Runco, 1988). Also, Franken (2007) describes creativity as an individual's propensity to create new ideas, new possibilities, and or new alternative ways of solving life problems. Similarly, creativity has also been described as the act of using an individual's initiatives to transform a business concept into a new entrepreneurial venture (United Nations Development Programmes (UNDP, 1999). In a related article, creativity is

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also seen as the act of evolving something new into existence by converting into reality new and imaginative ideas (Naiman, 2007). Furthermore, creativity is the production of novel, appropriate ideas in any realm of human activity from science to the arts, to education, to the business, to everyday life (Amabile, 1997). In this study, creativity refers to the production of new and novel ideas.

1.9 Organisation of the Study

This study is organised in chapters; chapter one covers the introduction of the study which contains; background and motivation of the study, problem statement, research questions, research objectives, the significance of the study, the scope of the study, an overview of the study location, and definition of terms. Chapter two covers a review of related literature of the study, variables including entrepreneurial career option, components of EE (know-what, know-how, know-who, know-why, & know-when), and creativity. Theoretical framework and underpinning theories are also discussed. Thus, the HCT and Dyer's (1994) entrepreneurial careers serve as the theoretical base. Chapter three consists of the introduction, research design, unit of analysis, population of the study, sample size and sampling techniques, data collection methods, validity and reliability of measures used, and lastly, pilot testing. Chapter four describes the statistical procedure for analysis of the study findings. The measurement model and structural model are examined through analysis of the SmartPLS-SEM path modelling. Lastly, chapter five recapitulates the study, discusses the study findings, and concludes the study as well as offers recommendations for the way forward.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature on the relationship between entrepreneurship education (EE) and entrepreneurial career option (ECO) among polytechnic students. It further seeks to determine the mediating effect of creativity on the relationship between EE and ECO among polytechnic students in Northwestern Nigeria. All the concepts and definitions of the constructs are provided and discussed. Therefore, the relationship between all the components of EE (know-what, know-who, know-how, know-why and know-when) and ECO is explained. The human capital theory (HCT) and Dyer's (1994) model of entrepreneurial careers are used as theoretical underpinnings to explain the study.

2.2 Entrepreneurial Career Option

ECO is a conscious and planned resolve to choose to start one's business venture as a career path (Krueger, Reilly, & Carsrud, 2000). ECO is an individual's deliberate decision and total commitment to embrace entrepreneurship as a career option (Bignotti, 2013; Costa, Caetano, & Santos, 2016; Perez-Lopez et al., 2016). Previous studies have shown that the decision to become an entrepreneur can be regarded as the choice of a specific career among other available career options (e.g., Douglas & Shepherd, 2002; Isah & Hashim, 2018; Pihie & Akmaliah, 2009; Yarima & Hashim, 2016). Entrepreneurial career has been described as the ideal career option for youth

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and graduates (e.g., Beeka & Rimmington, 2011; Buang, 2011; Fatoki, 2014; Grigore & Toma, 2014).

Moreover, entrepreneurial career offers significant opportunity for individuals to achieve financial independence and economic well-being, and this has shown likelihood of supporting an economy through job creation, innovative activities, and economic growth (e.g., Akhuemonkhan et al., 2014; Maina, 2014; Packham, Jones, Miller, Pickernell, & Thomas, 2010). Thus, entrepreneurial career is a most sought-after career option for students as they prepare to join the labour market after their graduation (Fletcher, 1999; Piperopoulos, 2012; Mohammed et al., 2011; Udu, 2014; Xavier, Ayob, Mohd Nor, & Yusof, 2012; Yarima & Hashim, 2016).

Many authors have posited that career in entrepreneurship is fast becoming a relevant option that has the ability to withstand the complexities of the present labour market, increased competitiveness, and the challenges of globalization (e.g., Aminu & Mahmud, 2015; Costa et al., 2016; Gem, 2011; Israel & Johnmark, 2014; Perez-Lopez et al., 2016). Therefore, an individual's decision to become an entrepreneur is at the core of entrepreneurship and marks that individual's decision to engage in enterprise as a career option (McStay, 2008). Therefore, the youths have a lot of opportunities if they could explore their creative potentials in the entrepreneurship arena as their career option (Fatoki, 2010; Ofole & Ezeokoli; 2014).

Globally, governments have realised the importance of ECO and have indicated interest in its promotion through increasing the number of colleges and universities

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offering entrepreneurship courses (e.g., Ahmad & Buchanan, 2015; Aslam & Hasnu, 2016; Arasti, Falavarjani, & Imanipour, 2012; Bakar et al., 2015; Bell, 2016). Given the significance of career choice to entrepreneurship research, it is pertinent to give an insight into the concept of career choice in general. In this study, ECO is advocated as a remedy to youth and graduate unemployment, particularly among polytechnic graduates in Northwestern Nigeria.

2.2.1 Factors Influencing Career Choice

In the working life of an individual, he/she occupies some jobs, roles, and positions with individual rights, responsibilities, and privileges attached. These bundles of tasks, functions and job positions refer to as a career (Coetzee, 2006). Typically, the career choice is set against an alternative job in full-time employment in a formal organisation (Tkachev & Kolvereid, 1999; Schroder, Schmitt, & Arnaud, 2011; Zellweger, Sieger & Halter, 2011).

Furthermore, multiple factors including the situation in which individual lives, their abilities, social networks, and educational attainments influence their career choice (Kerka, 2000; Edward & Quinter, 2011; Sykes & Govender, 2015; Muofhe & Du Toit, 2011). Also, Schruder and Theron (2001) classify factors affecting career choice into subjective and objective criteria. In the case of subjective criteria, to individual's preferences, intentions, and aspirations are said to determine their career choose (Yarima & Hashim, 2016). Objective measures, on the other hand, refer to the existing state or prevailing economic circumstances (Franke & Luthje, 2004; Gurbuz & Aykol, 2008; Schwarz, Wdowiak, Almer-Jarz, & Brietenecker, 2009). An

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individual's level of education/knowledge also influences his career choice (Awang, Ibrahim, & Ayub, 2014; Dickson, Solomon; & Weaver, 2008; Linan et al., 2011). Similarly, a person's previous experience impacts upon his/her career choice (Arrighetti, Cancati, Landini, & Monacelli, 2013; Galloway & Brown, 2002).

Equally, scholars argued that factors such as individual's personality, self-concept, interest, social support, cultural identity, role models, and accessible resources including information and financial resources influence his/her choice of career (Kerka, 2000; Rousseau & Venter, 2009; Shook, Priem, & McGee, 2003; Turton & Herrington, 2012). Similarly, Noer, Idrus, Hadiwijoyo, and Wirjodirdjo (2013) observe that an individual's proactiveness, competitive aggressiveness, and risk-taking propensity significantly influence entrepreneurial career choice. Furthermore, parents have been found to have a significant influence on their children personal career decisions (Bojuwoye & Mbanjwa, 2006; Taylor, Harris, & Taylor, 2004; Shumba & Naong, 2014). Naturally, parents play a significant role in the career choice of their children. This is because parents act as the carriers of value, emotions, and experiences in respect of self-employment (Bojuwoye & Mbanjwa, 2006; Rahmawati, Hasyyati, & Yusram, 2012; Shumba & Naong, 2014).

Similarly, career guidance information accessible to individuals on career choice, financial constraints of a person, his values, and abilities, as well as a desire to fulfil a childhood dream could influence career choice decisions (Turton & Herrington, 2012). In particular, even a fantastic picture of a profession advertised over the media could affect action to choose that profession as a career option (Nelson, 1995).

Consequently, individual's evaluation of entrepreneurship as favourable or unfavourable career choice option forms positive or negative attitudes toward entrepreneurial behaviour (Ajzen, 1985; 1991). His bias towards the action informs his belief in his perception of desirability or non-desirability of an entrepreneurial behaviour (Ajzen, 1991; Zellweger, Sieger, & Muehlebach, 2010). Arguably, entrepreneurial career choice is determined by the link between entrepreneurial abilities and entrepreneurial attitudes, but also draws on the connection between an individual's income potentials and his competencies (Douglas & Shepherd, 2000; Franke & Lüthje, 2004).

In other words, individual difference variables, such as age, gender, stage of maturity, level of education, work experience, and role models are found to predict entrepreneurship (Kautonen, Teemu, van Gelderen, Marco & Fink, 2015). Also, attention is also paid to income, risk, and independence when appraising alternative career options (Douglas & Shepherd, 2000). Furthermore, mentors are also found to be as critical as capital to the start-up process (Kew et al., 2013). Therefore, a person's attraction or personal preference for entrepreneurship results in his decision to create a business (Linan, 2008; Yarima & Hashim, 2016). Hence, entrepreneurial career is the process of one's choice to begin and continue to operate as an entrepreneur (Shane & Venkataraman, 2000). In this study, the factors determining the choice of general career also applies to the choice of an ECO as career choice option. Essentially, the factor outlined as influencing career choice also affects the choice of ECO as a career option.

2.2.2 The Process of Career Choice

Previous studies describe career choice as a cognitive process in which beliefs, attitudes, and intentions develop as a result of cognitive manipulation of knowledge and experiences (Farrington, Gray, & Sharp, 2011; Galloway & Brown, 2002; Lent, Brown, & Hackett, 2002). Cognition is all practices through which sensory responses are transformed, reduced, elaborated, stored, recovered, and used (Sloman, 2011). Accordingly, the cognitive decision model argues that students' career choices are general and goal oriented which evolve in a series of steps, leading to a review of interest and the probability of choosing a specific career (Beggs, Bantham, & Taylor, 2008). Similarly, entrepreneurial career choice also follows the same line of thinking (Autio, Keeley, Klofsten, Parker, & Hay, 2001; Germeijs & Verschueren, 2007; Wiklund, Davidsson, & Delmar, 2003; Shane & Venkataraman, 2000).

In the final analysis, it is believed that students perception of self-employment as a needed career option forms stricter self-employment intention than those students who do not perceive self-employment as a desirable career option. Students of HEIs are at a point after the graduation of looking for a career option that they will engage in after graduation (McStay, 2008), as such they are likely choosing ECO.

Therefore, EE must assist in inculcating the right attitude in students, and be given all encouragement and assistance to choose an entrepreneurial career as the desired career option after graduation (Jaafar & Rashid Abdul Aziz, 2008; Matlay, 2006; & McStay, 2008). Hence, the need to promote entrepreneurial talents that can be able to create and operate successful business ventures (Farashah, 2013; Hoe et al., 2014;

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Lima, Lopes, Nassif, & da Silva, 2014; Sofoluwe et al., 2013; Ooi & Nasiru, 2015). For the lofty aspirations to be achieved, efficient support structures are essential to exploit local initiatives and propagate new enterprises capable of creating sustainable employment (Ahmad & Xavier, 2012; Ismail & Ahmad, 2013; Johansen, 2007; Tang, Chen, Li, & Lu, 2014).

For this study, ECO is achieved through a cognitive processing in which beliefs, attitudes, and intentions are manipulated through the delivery of knowledge of components of EE. EE must be directed towards the creation of entrepreneurial talents among students to create new businesses as alternative forms of paid employment in private or public sector organisations.

2.2.3 Entrepreneurial Process of New Venture Formation

In this study, the researcher discussed new venture creation as an activity that is closely aligned to ECO, because individuals create a business in the process of engaging in self-employment. Prior research has shown that new venture formation involves a complicated process and many factors play a part in the entrepreneurial process (Hormiga, Hancock, & Valls-Pasola, 2013). Previous studies indicate reasons for the creation of new businesses. For instance, trait approach, social situation variables, and cognitive variables are said to play a significant role in venture creation decision (Shane, Kolvereid, & Westhead, 1991).

Specifically, studies have found that even own gender and nationality play an influencing role in new venture creation (Shane et al., 1991, Zapalska, 1997). Push

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and pull factors, concerning negative and positive developments in an individual's life, can also lead to the creation of new business venture (Adebayo, 2013; Ahmad, Jabeen, & Mehmood Khan, 2014; Mahmood, Sohail, Khalid, & Babak, 2012; Pfeiffer, & Reize, 2000). Push motivations are more related to intrinsic motivation and often related to internal or emotional aspects of unemployment, family support and the need for recognition, and prospects, recession, redundancy, blocked promotion etc.

On the other hand, pull factors are external, cognitive and situational such as; the desire to be one's boss, financial benefits, self-actualisation, need for approval, autonomy, need for the use of experience etc. (Ahmad et al., 2014, Pfeiffer, & Reize, 2000). Pull and push factors also describe necessity-based and opportunity-based reasons for creating a firm (Adebayo, 2013; Hartog, Hessels, van Stel, & Jong, 2011). Therefore, these variables explain why some people are more likely to create ventures than others. This is because, some people may be able to recognise opportunities where others do not (Baltar & De Coulon, 2014; Dawson, Henley, Latreille, 2009; Segal, Borgia, & Schoenfeld, 2005; Watson, Hogarth-Scott, & Wilson, 1998).

Similarly, entrepreneurship emerges and flourishes when opportunities meet individuals with the right motivation and skills to turn the perceived opportunity into business reality (GEM, 1999). Therefore, everyone can be a successful entrepreneur and creative, given that; he has prospects, encouraged, receives training, and motivated (Okoye & Eze, 2010). Hence, the study lays credence to the need for the

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creation of entrepreneurial awareness and entrepreneurship activity among students of HEIs through the medium of EE as life after tertiary education experience offers individuals an appropriate opportunity to become an entrepreneur (Harvey & Evans, 1995).

Meanwhile, the developing countries and Africa follow the examples of the United States of America and Europe to use EE as an instrument of combating unemployment and stimulating sustainable economic development among youths (Sharma & Madan, 2014). But, unlike the USA, EE is comparatively new in Africa, introduced and made compulsory in all HEIs in Nigeria during the 2007/2008 academic sessions (Akhuemonkhan, Raimi, & Sofoluwe, 2013; Anene & Imam, 2011; Efi, 2016; NBTE, 2008, Olorundare & Kayode, 2014). Thus, it was believed that though ECO may not be an absolute remedy to youth unemployment in Nigeria, it can help to reduce it to a lesser extent. Therefore, entrepreneurial career has become a veritable roadmap to reducing unemployment among Nigerian youth (Salami, 2013).

Moreover, it was observed that graduates from HEIs are at a critical time in their lives when a career is needed to achieve means of livelihood and fulfil their life ambitions (Chigunta, Schnurr, James-Wilson, Torres, & Creation, 2005). Hence, more youth must be empowered to embrace entrepreneurship as a career option by exposing them to the risks, rewards, and critical thinking skills necessary to raise their entrepreneurial potentials (Ammal & Mathi, 2014; Beeka & Rimmington, 2011; Ojo & Abayomi, 2014; Olu-Obafemi & Onajinrin, 2014; Sebikari, 2014). Thereafter,

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unemployment, poverty, and associated social ills will be eradicated (Beeka & Rimmington, 2011; Fatoki, 2014). Consequently, this justifies our choice of the study population as Higher National Diploma students, who must have taken EE courses and having been examined in it during their National Diploma programmes and just about to be exposed to the labour market.

Additionally, promoting ECO as a viable career option should be a continuous process. For example, some authors believe that teaching business skills as a lifetime asset, and supporting entrepreneurial ventures do not have a start or end point (e.g., Beeka & Rimmington, 2011; Daze, 2013). It is widely believed that future prosperity depends upon the creation of vibrant home-grown businesses that are genuinely entrenched in the home economy (Fletcher, 1999). Hence, the pool of entrepreneurial talents of a nation must be expanded to develop and manage new business ventures. Therefore, effective support structures are required to harness local initiatives and cultivate new businesses that are capable of creating sustainable employment (Garavan & O'Cinneide, 1994).

Furthermore, other scholars observed that the decision by an individual to start a business is a most momentous and fascinating choice an individual makes in organisation world and that cognition plays a vital role in new venture creation (Douglas & Shepherd, 2002; Iglesias-Sánchez et al., 2016; Sivarajah & Achchuthan, 2013; Shook et al., 2003). Entrepreneurial cognitions are viewed as the knowledge structures that people use to make evaluations, judgments concerning opportunity

evaluation, venture creation, and growth (Mitchell, Busenitz, Lant, McDougall, Morse, & Smith, 2002).

Meanwhile, this implies that entrepreneurial cognitions attempt an understanding of how entrepreneurs connect the dots through the use of mental models to put together information that was hitherto fragmented (Baron, 2006; Baron & Ensley, 2006). This enables entrepreneurs to spot opportunities where others do not, thereby gathering the critical resources to create and sustain businesses by identifying and creating new products and or services (Mitchell et al., 2001). Therefore, analysis of cognition contributes extensively to the study of entrepreneurship (Sanchez, 2013). In the present study, it is evident that business organisations are not created overnight. Entrepreneurs follow sequential stages to create a new business ventures. In doing so, cognition plays a vital role in creating and association and bisociations between hietheto unrelated events to create a new product or service.

2.2.4 Stages of New Venture Creation Process

Extant literature suggests that the creation of new business venture concerning the choice of self-employment as a career follows sequential stages and scholars have proposed different models of entrepreneurial business venture creation process (e.g., Ardichivili, Cardozo, & Ray, 2003; Baker & Nelson, 2005; Cunneen & Mankelow, 2007; Jack, Dodd, & Anderson, 2008; Slotte-Kock & Coveilo, 2010). According to Baron (2007) and Frese and Gielnik (2014), creating a new venture as ECO involves three sequential stages; 1) the prelaunch stage or opportunity identification phase in which the entrepreneur identifies viable and practicable business

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opportunities; 2) the launch or development and execution phase in which the entrepreneur assembles the essential resources for starting a venture; and 3) the post-launch phase where the entrepreneur manages the new enterprise in a way that it will grow and survive. Some other studies describe start-up stages to include; idea creation, opportunity recognition, initial planning and preparation, entry and launch, and post-entry development (Sykes & Govender, 2015).

Similarly, Bhave (1994) classifies venture creation into three phases; opportunity recognition, which occurs through purposeful search and identification of an unsatisfied need. Then, the organisational stage when the entrepreneur assembles human and material resources; and economic exchange stage when actual opportunity exploitation begins. Similarly, Shook et al. (2003) suggest four steps in the new venture creation process; entrepreneurial intention, opportunity search and discovery, opportunity exploitation by new venture creation, and exploitation activities.

Precisely, the model explains that psychological element of ECO decision plays a significant role in each of phase, although the individual entrepreneur may be most significant in the first phase. Although the entrepreneur's influence may erode as the venture develops, as the leader, he is ever essential (Hambrick 2007; Frese & Gielnik, 2014). For this study, however, the concept of ECO corresponds with Shook et al. (2003) organising model of exploiting entrepreneurial opportunity by creating a new business venture. The study examined the mediating effect of creativity on the

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relationship between EE and ECO among polytechnic students in Northwestern Nigeria.

Previous studies indicate that entrepreneur's ultimate objective is to create a new business venture (Shook et al., 2003). Hence, entrepreneurship was considered as the intellectual investigation of how opportunities are discovered, who discovers such opportunities, how the prospects are assessed, and how opportunities are exploited through the provision of goods and services (Venkataraman, 1997; Shane & Venkataraman, 2000). The entrepreneurial process was viewed as those functions and activities associated with perceiving opportunities and the creation of a business to pursue identified opportunities (Bygrave, 1993). Individuals in this respect, interact with the environment to discover, evaluate and exploit opportunities (Shook et al., 2003). Equally, entrepreneurship was earlier recognised as the creation of organisations, and that entrepreneurs are different from non-entrepreneurs because entrepreneurs create organisations whereas non-entrepreneurs do not (e.g., Gartner, 1985). Therefore, the intermediary between opportunities and entrepreneurs is the business organisations that entrepreneurs create (Shook et al., 2003).

According to the Shook's et al. (2003) organising model, new venture creation follows four sequential stages that begin with the entrepreneurial intention (EI), the discovery of opportunity through active search, opportunity exploitation by new venture creation, and subsequent exploitation activities. The model explains that creating a new business venture or entering self-employment as a career option is

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proceeded by an examination EI held by individuals concerned (Smith, Sardeshmukh, & Combs, 2016).

Moreover, EI is one of the more recent approaches to understanding the entrepreneurial process, and several scholars have adopted it (Autio et al., 2001, Davidsson, 1995, Krueger & Brazeal, 1994; Peterman & Kennedy, 2003; Zhao et al., 2005). EI is an individual's intention to start a new business (e.g., Krueger, 1993; Krueger & Brazeal, 1994). Intention is an inner state of mind that precedes action and directs attention to a goal of establishing a new business venture (Lo, 2011). Also, intention is a precursor of action (Ajzen, 1991; Bird, 2015; Shapero & Sokol, 1982). Basic intention models illuminate on the psychological factors in the growth of EIs; i.e. Bird's (1988) model of implementation of entrepreneurial ideas; Shapero's (1982) model of the entrepreneurial event; and Ajzen's (1991) theory of planned behaviour (TPB). Further, EIs are stronger for those whose attitude towards risk and independence is positive (Van Auken, 1999). An individual's income and work effort, however, were not found to be a significant determinant of EIs.

The model as depicted in figure 2.1 further explains that entrepreneurial opportunity search commences after an individual develops intentions to choose entrepreneurship as a career option (Krueger, 1993; Shook et al., 2003). Opportunity search begins with an assumption about the probable expectations of the market value of goods and services (Kaish & Gilad, 1991). An entrepreneurial opportunity exists where new products, services, raw materials, and organising methods can be sold to a market at a relatively higher cost. Individuals need to be alert to entrepreneurial information.

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Additionally, entrepreneurs' personality traits, social networks, and prior knowledge are identified as critical antecedents of entrepreneurial alertness to business opportunities (e.g., Ardichvili, Cardozo, & Ray, 2003; Hajizadeh & Zali, 2016; Volery & Shaper, 2007). Entrepreneurial alertness is the propensity to notice information, patterns of behaviour or incidents which suggest unsatisfied needs or possible new combinations of the resource (Volery & Shaper, 2007). Therefore, entrepreneurial alertness is a precondition for successful opportunity identification (recognition, development, and evaluation).
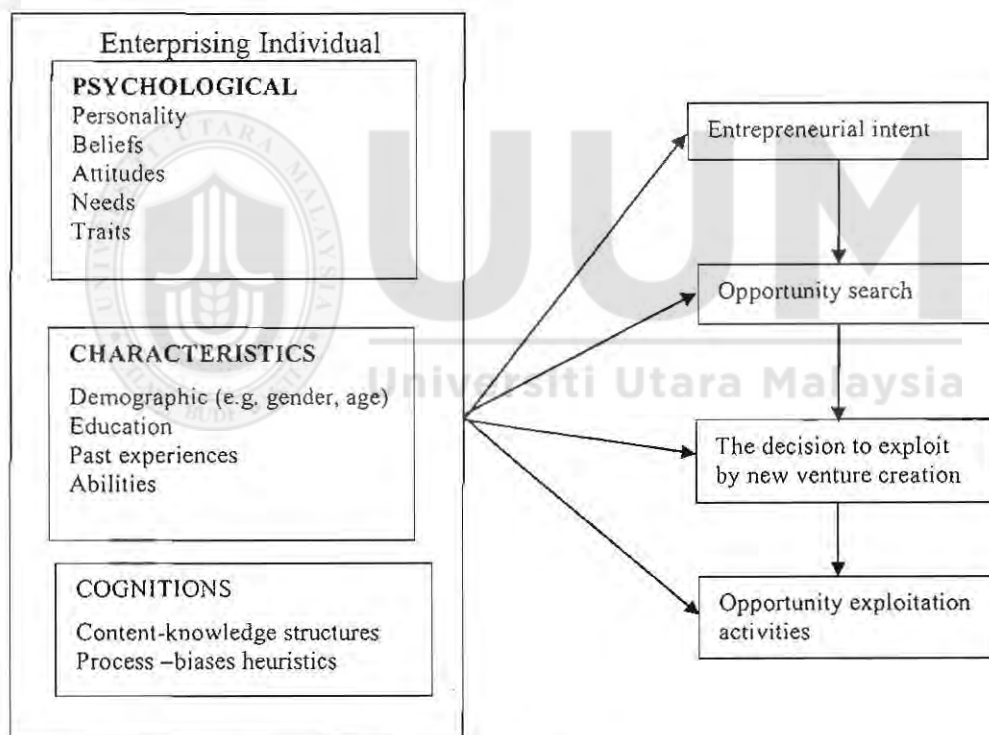
Figure 2.1: Shook's et al. (2003) Organizing Model

Importantly, Shook et al. (2003) explain that the discovery of an opportunity leads to the issue of choice of how best to exploit the opportunity; that is, to create a new venture or sale the opening to an existing firm. Starting the business or venture

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creation has been recognised as a central activity of the entrepreneur (Volery & Shaper, 2007). An entrepreneurial opportunity is only being exploited when the entrepreneur can put together the essential resources to start the business by creating a venture. Consequent upon the decision to utilise opportunity by creating a new venture, Shook et al. (2003) argued, that the individual assembles resources such as human resources, facilities, location, and supplies to establish value chain to production infrastructure and subsequently, profit-making (e.g., Bird, 1988; Shane & Venkataraman, 2000; Williamson, 1985). Indeed, these stages signify the importance of resources in the new business creation process. A resource is referred here as anything or quality that is useful that is used to pursue an opportunity (Volery & Shaper, 2007). Hence, funds used to facilitate the requirements to develop markets, and knowledge required by the entrepreneurs are ingredients of entrepreneurial opportunity to obtain venture creation (Venkataraman, 1997).

In this study, the exploitation of business opportunity through the creation of new venture (NVC) stage as described by Shook et al. (2003) in figure 2.1 corresponds with the researcher's conception of ECO. It is a stage where the individual has formed an intention to pursue entrepreneurship as a career choice option. Again, the potential entrepreneur has searched and found entrepreneurial opportunity and is in the process of deciding to start a new business to exploit the opportunity discovered. However, a lot of stages were also involved in the decision-making process as the individual transforms into an active entrepreneur. However, that is not within the study coverage.

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2.2.5 Entrepreneurial Decision of New Venture Creation

The decision by an individual to create and manage his/her own business is referred to as entrepreneurial decisions (Chen, Green, & Crick, 1998). The entrepreneurial choice is strategic as such it requires a lot of efforts (Minniti, 2004), and individuals make decision contingent upon the environment he/she exists. Entrepreneurs often consider some factors in making entrepreneurial decisions and choices which eventually culminates in the creation of a product, service, or an organisation that does not exist before (Minniti, 2004).

Equally, entrepreneurs require a lot of information to take critical decisions such as starting a new venture (e.g., Shane & Eckhardt, 2003; Germeijs & Verschueren, 2007). Scholars argue that entrepreneurs do spend much time than executives do in searching for information (Markman, Baron, & Balkin, 2004). Because, when an opportunity is identified, an entrepreneur may need to learn more about the discovered opening, which may lead to searching for more information to act on the opportunity (Minniti, 2004).

More so, prior knowledge of the industry is considered as a significant factor in the entrepreneurial process, because it increases the likelihood of identifying an opportunity in the sector (Shane, 2000). Consequently, cognition is relevant in entrepreneurial decision making as cognitive variables influence the decision to start a new venture or not to start.

For this study, however, entrepreneurial decision refers to a person's resolve to create and operate a new business venture as an entrepreneurial career option. Therefore, ECO is a resolution of an individual to engage in entrepreneurship as a career option by starting a business. The concept of ECO in the study is similar to Shook's el al. (2003) model stage of opportunity exploitation by new venture creation. This suggests that the student might develop EI, search and discover an opportunity, and decide to exploit opportunity by starting a new business.

2.2.6 Dimensions of Entrepreneurial Career Option

Prior studies showed that individual's decision to exploit entrepreneurial opportunity through the creation of a new business venture gives due attention to individual's psychological and cognitive processes (Chen et al., 1998; Shook et al., 2003). Research on entrepreneurial cognition provides us with an understanding of how entrepreneurs use simplified mental models to put together previously unconnected information. The connection helps them to identify and create new products or services, and to bring together the needed funds to start and grow businesses as well as resolve to pursue opportunities or not (Pretorius et al., 2004).

Similarly, the entrepreneurial decision is affected both by dispositional factors such as job displacement, prior work experience etc. as well as contextual factors as the locus of control, need for achievement etc. (Chen et al., 1998; Shook et al., 2003). Recent literature, however, suggests that entrepreneurial decision is a prerogative of the individual who acts based on intention to rationally appraise situational and individual factors to make decisions (Krueger & Brazeal, 1994).

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Consequently, a person's decision to engage in an ECO is an outcome of some factors or a combination of factors. Scholars listed factors influencing persons' decision to exploit entrepreneurial opportunity through venture creation to include entrepreneurial attitudes, entrepreneurial risk perception, entrepreneurial motivation, and entrepreneurial self-efficacy (e.g., Bell, 2016; Zhang, Dongyuan, Wang, Crystal, & Owen, 2015; Campopiano, Minola, & Sainaghi, 2016; Farsi, Modarresi, Motavaseli, & Salamzadeh, 2014; George, Parida, Lahti, & Wincent, 2016).

2.2.6.1 Entrepreneurial Attitudes

An attitude is the feeling that a person has about an object, based on their beliefs about that object (Kind, Jones, & Barmby, 2007). Attitude is natural or mental state of readiness, organised through experience, exerting a direct dynamic influence on the individual's response to all objects and situations to which it is related (Tesser & Schwarz, 2001). Others view attitude as a mindset or a tendency to act in a particular way due to both an individual's experience and temperament (Isah & Garba, 2015). Previous studies have shown that attitudes predict entrepreneurship (Siu & Lo, 2011; Krueger et al., 2000). Moreover, the theory of planned behaviour assumed that attitude towards entrepreneurial career determines a person's intention to choose entrepreneurial career option (Ajzen, 1991). Attitude towards ECO is based upon a person's belief in entrepreneurial career path, which is influenced by his career preference and conviction of the image of entrepreneurship as a career option (Autio et al., 2001; Yarima & Hashim, 2016).

Consequently, it was posited that an individual's attitude towards entrepreneurship is a measurement of that individual's perceived probability to run his/her own business (Asghar et al., 2016). Therefore, attitude is an individual's motivation to choose entrepreneurship as a career choice by keeping in view the inside appeal for new venture creation. Thus, individual attitude towards entrepreneurship is a factor in determining whether the individual will choose ECO or not (Zhang et al., 2015). Similarly, Bell (2016) investigated the association of students' entrepreneurial attitudes and skills and their classification of employment six months after graduation and found that proactive disposition and achievement motivation relate to the possibility of a school leaver being employed in a managerial or professional position upon graduation.

2.2.6.2 Entrepreneurial Risk Perception

The risk perception is a subjective judgment of the amount of risk involved in a situation. Risk perception differs from one individual to another, as from entrepreneurs and non-entrepreneurs (Keh, Foo, & Lim, 2002). Risk taking is a tendency to engage in behaviours that have the potential to be harmful or dangerous, but in some occasions, it provides the opportunity for achieving something positive (Isah & Garba, 2015). The risk is affected by cognitive biases and decision to exploit venture opportunity is dependent upon an individual's perception of risk involved, which may be considered as high or low risk by the person concerned (Simon & Houghton, 2002; Simon, Houghton, & Aquino, 2000). Therefore, an individual's EI is influenced by their risk propensity, opportunity awareness and especially their seeming capabilities (Zhang, Wang, & Owen, 2015; Ebrahim & Scott, 2014).

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2.2.6.3 Entrepreneurial Motivation

An individual's motivation is an essential determinant of venture creation and that motivation is affected by individual values and traits. An individual has different motives of entry and persisting in an entrepreneurial career. Entrepreneurial motives may arise as a result of push or pull factors (Dawson & Henley, 2012; Gilad & Levine, 1986; Kirkwood, 2009). Kim-Soon et al. (2014) argue that the strength of motivation in choosing ECO among students has a relationship with EI. Motivating factors for entrepreneurship are attitudes, subjective norms, and behavioural control. Attitudes and subjective criteria are related to students' present and future ambition to be an entrepreneur, while behavioural control significantly relates to students present career intention, but it does not have a significant relationship with intention to pursue entrepreneurship in the future. A study was conducted to estimate the factors that influence career choice in enterprise among students and graduates of Universiti Utara Malaysia (UUM) and effect of EE and probability of choosing entrepreneurship as a career option. Results indicate that the UUM students and graduates have a high tendency of picking enterprise as a career option (Mohamad, Lim, Yusof, Kassim, & Abdullah, 2014).

Individuals are motivated to create a new business venture by pull (positive factors) and negative (push factors). According to this approach, pull theory explains that individuals are drawn into entrepreneurial behaviour in search of wealth, self-fulfilment, and independence. Individuals are attracted to entrepreneurship, according to the push theory, as a result of the difficulty in finding employment, job dissatisfaction, lack of opportunities for advancement, inadequate compensation etc.

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(Gilad & Levine, 1986). However, previous literature suggests that individuals are more likely to become entrepreneurs due to pull factors than they are by push factors. In other words, entrepreneurial motivation can arise as a result of opportunities within the environment (opportunity-based entrepreneurship) or as a result of some trigger events in the background (necessity-based entrepreneurship) (Dawson, Henley, & Latreille, 2009; Giacomin, Janssen, Guyot, & Lohest, 2011). However, prior studies indicate that an individual is more often pulled to entrepreneurship than been pushed into it (Orhan & Scott, 2001).

The cognitive approach to entrepreneurial motivation suggests that motivation to create a new business enterprise operating in the same fashion with Vroom's expectancy theory. Given that career choice is a function of the behaviour that will lead to the most desirable outcome (Segal, Borgia, & Schoenfeld, 2005). Here, motivation is the instrumentality, expectancy, and valence, and that an individual's intention to create a new venture is a function of the perceived desirability and perceived feasibility of the entrepreneurial activity (Segal et al., 2005).

2.2.6.4 Entrepreneurial Self-efficacy

Entrepreneurial self-efficacy (ESE) has emerged as an essential construct in explaining entrepreneurial success. A large body of literature supports the fact that SE affects the startup and business growth process (e.g., Baum, Locke, & Smith, 2001; Drnovsek, Wincent, & Cardon, 2010; Krueger, 2003; Markman et al., 2002; Segal et al., 2005). Self-efficacy refers to a person's strength of belief that he is capable of performing the tasks and roles of an entrepreneur (Boyd & Vozikis, 1994;

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Yarima & Hashim, 2016). Self-efficacy offers more explanation to the strength of EIs and that the intention will lead to entrepreneurial action (e.g., Krueger & Brazeal, 1994; Krueger et al., 2000).

More so, high self-efficacy leads to increased resourcefulness and perseverance, and thus better performance. Indeed, individuals with high self-efficacy think differently and behave differently from those individuals with low self-efficacy (Pretorius, & Shaw, 2004). Also, higher ESE among students reveals more entrepreneurial mindset when they anticipate less risk (Solesvik, Westhead, Matlay & Parsyak, 2013). Further, recent studies indicate that the entrepreneurial environment is full of opportunities for those with higher ESE and fraught with costs and risks for persons with low ESE (e.g., Krueger & Brazeal, 1994). The perceived feeling of self-confidence by the self-efficacious persons may lead to the decision to create a new venture even when the opportunity identified is ambiguous (Chen et al., 1998). Seemingly, persons that see themselves as capable of forming an enterprise are anticipated to be alert and thoughtful to opportunities and be able to exploit such opportunities if worthwhile. After all, persons do not find opportunities, but persons construct opportunities (e.g., Krueger, 2000).

Also, ESE states the confidence levels of individuals about his certain beliefs, personality and environmental possibilities and constraints as well as closeness to action and intentionality (Boyd & Vozikis, 1994). ESE is a determinant of new venture growth and personal success (e.g., Markman et al., 2002); and a good predictor of intention to start (e.g., Shane et al., 2003). Similarly, ESE plays a role in

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heuristic decisions that entrepreneurs make (Drnovsek et al., 2010). Furthermore, ESE plays a moderating role in the growth of entrepreneurs and their venture performance (e.g., Hmieleski & Corbett, 2008). Similarly, studies that explored the linkage between ESE investment, alertness, risk-taking asset accumulation, and the outcome relating to the entrepreneurial mindset reported higher intensity of entrepreneurial mindset by entrepreneurial self-efficacious individuals (Herron & Sapienza, 1992). Further, ESE students who accumulated the connection entrepreneurial alertness assets stated higher concentration of entrepreneurial mindset. ESE students were more oriented to higher entrepreneurial mindset when they had gathered more connection entrepreneurial alertness asset. ESE students who accumulated the risk-taking propensity asset reported lower intensity of entrepreneurial mindset. Also, ESE students were more oriented to higher entrepreneurial mindset when they perceived less risk (Solesvik et al., 2013).

However, it is imperative to mention here that the list of factors leading to an entrepreneurial career option is inconclusive, given the fact that, each society or country has a unique history, socioeconomic, cultural, political, and demographic circumstance which may have different reasons for an ECO. Recent studies indicate that participation in taught EE can make a positive impact on attitudes towards entrepreneurship as a viable career option (Bakar et al., 2015; Gorman, Hanion, & King, 1997; Mohamad et al., 2015). Similarly, EE also influences attitudes to entrepreneurship, role models, social norms, seeming behavioural control, and self-efficacy (Muofhe & Du Toit, 2011). Further, promoting entrepreneurship as a viable career option and transfer of business skills is a lifetime asset, and supporting

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entrepreneurial ventures is a lifelong experience that does not have end time (Daze, 2013). Hence, entrepreneurial skills, attitudes, and abilities should be promoted and developed continuously (Daze, 2013).

In this study, the outlined factors also relate to the discussions on ECO, because new venture creation is a decision that involves social, psychological, and personal factors. However, recent literature suggests that participation in EE courses positively influences an individual's decision to found a new business as an entrepreneurial career option (Ebewo, Rugimbana, & Shambare, 2017; Merovci & Shehu, 2013; Kwong & Thompson, 2016).

2.3 Entrepreneurship Education

EE could be traced back to 1938 when Shigeru Fijii, introduced and in fact, taught EE at Kobe University in Japan (Alberti et al., 2004). Earlier on, Katz (2003) asserted that since the introduction of the first entrepreneurship class at Harvard's Business School, in the United States in 1947, the number of American students taking entrepreneurship or small business courses has drastically been on the increase. He further argues that as a result of this 20th century's history of EE, the economists turned to America for inspiration.

Additionally, EE and training are aimed at building skills and knowledge in readiness for starting a new business venture (GEM 2008). EE is the process of providing individuals with the capability to recognise commercial opportunities, and the attitudes, skills and knowledge to utilise them (Acs & Storey, 2004). Similarly, EE is

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the process of bringing together creative and innovative ideas and linking them with management and organisational skills to combine people, money, and resources to satisfy identified needs and create wealth (Omolayo, 2006).

Furthermore, the Nigerian Education Research and Development Council (NERDC, 2004) described EE as the instructional method which includes the study of science and technology, and the acquisition of entrepreneurial attitudes, knowledge, and skills relevant to occupations in diverse sectors of economic and social life. EE as well seeks to increase entrepreneurial knowledge, skills, capacities, intentions, and attitudes of students that are in tandem with the current requirements of an economy (Lo, 2011).

Specifically, EE's objective is to assist graduates, as well as operating deliberately and aspirant entrepreneurs in the setting up and operation of their entrepreneurial business ventures instead of seeking paid employment from someone else or institutions (Mwangi, 2011). EE delivers specialised knowledge to students that inculcate the traits of risk-taking, innovation and arbitrage and coordination of production factors to create new goods and or services to new and existing users within human communities (Minniti & Levesque, 2008). EE seeks to make available to students of HEIs the motivation, knowledge, and skills to support entrepreneurial studies in a diversity of setting (European Union Commission, 2010).

Also, EE is the building of knowledge and skills either 'about' or 'for the entrepreneurship purpose in general, as part of recognised education programmes at

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primary, secondary or tertiary-levels of educational institutions (GEM, 2011). Similarly, other scholars argue that the type of education that emphasizes entrepreneurship is the precursor to changing the students' attitude to consider entrepreneurship as a viable career option (Holmgren & From, 2005). In a developing country like Nigeria, HEIs are expected to play the role of changing the mindset of the youth towards entrepreneurship as a career option (e.g., Israel & Johnmark, 2014).

More so, entrepreneurship within the context of education promotes both public and private HEIs regarding courses, business incubators, and other support activities in the sphere of entrepreneurial initiatives (e.g., Albort-Morant & Oghazi, 2016; Fayolle, 2000; Kuratko, 2005; O'Connor, 2013; Linan, 2004; Rae & Woodier-Harris, 2013). EE initiatives at the university level are considered fundamental for increasing the supply of potential entrepreneurs by making more students aware of and choose entrepreneurship as a career option. Contrary to the present situation, they argued that the traditional role of HEIs was to prepare and equip students to become competent employees instead of becoming self-employed (Fletcher, 1999; Kirby, 2004).

Similarly, HEIs play a substantial role in assisting students to make the transition to becoming flourishing entrepreneurs (Gibb, 2009; Gibb & Harr, 2010; Hannon, 2007; Herrmann et al., 2008; Volkmann, Wilson, Marlotti, Rabuzzi, Vyakarman, & Sepulveda, 2009). Moreover, some scholars observed that EE could as well serve as an essential intervention to deal with the current economic slump and trim down the

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level of unemployment experienced in many developing countries (Matlay, 2011). EE has, therefore, been described as significant to economic growth all over the world, developing and developed nations alike (Millman, Matlay, & Liu, 2008; Matlay, 2009).

Furthermore, Linan (2004) identifies four types of EE; (i) entrepreneurial awareness education (ii) education for start-up (iii) education for entrepreneurial dynamism, and (iv) entrepreneurs' continuing education. Similarly, Jarmieson (1984) classifies EE into three (3) distinct categories:

a.   Education about enterprise- aimed at creating awareness.

b.   Education for enterprise- aimed at encouraging participants to set up and run their enterprises.

c.   Education in enterprise- management education for established entrepreneurs and it focuses on ensuring the expansion and development of existing enterprises.

Based on these, EE is attributable to the essential competencies of an entrepreneur. The idea collaborates with the study of Kirby (2007) who suggests that EE courses should inculcate in students the necessary attributes and behaviours of enterprising individuals. In addition to knowing how to create new ventures, EE should equip individuals with personal characteristics and skills to enable them to recognise viable business openings and organise resources to exploit such opportunities (Henderson & Robertson, 1999). Accordingly, EE competencies are the knowledge, skills, attitudes, values, and behaviours that affect the enthusiasms and capabilities to carry out a

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profession (Brophy & Kiely, 2002; Rankin, 2004). EE competencies are the cognitive knowledge that individuals develop about what to do to perform entrepreneurship.

Equally, entrepreneurial skill development involves the transfer of knowledge, skills and attitudes (values and behaviour) to a framework of entrepreneurial know-what, know-how and know-why (Middleton & Donnellon, 2013). Similarly, entrepreneurial competencies is seen as the underlying characteristics to envisage new realities and make them come true; know-what (knowledge), know-how (skills), know-who (social networking skills), know-why (attitudes, values, & motives), and know-when (insights, intuition) (Bird, 1995; Mitchelmore & Rowley, 2010).

Similarly, scholars posit that there is no one best method of teaching entrepreneurship (Fayolle, 2008). The institutional circumstance, the contents, the objectives, to a large extent determines the choice of techniques and modalities to be employed (Fayolle, 2008). These EE competencies are the type of knowledge students' need to acquire to know what to do to create a new venture (know-what); the knowledge an individual requires for doing the entrepreneurial actions (know-how); and the knowledge that an individual need to understand and justify his actions (know-why). Previous research has applied this taxonomy in their studies of EE (e.g., Ashgar et al., 2016; Hussain & Hashim, 2015; Johannisson, 1991; Othman & Nasrudin, 2016; Souitaris et al., 2007).

In this study, the primary objectives of EE courses is to impart to the students, the knowledge of know-what, know-how, know-who, know-why, and know-when competencies as envisaged by previous scholars (Johannisson, 1991, Middleton & Donnellon, 2014).

2.3.1 The Know-what Component

Know-what refers to a technical component of knowledge. Know-what knowledge denotes the theoretical framework of understanding for taking entrepreneurial action. It is the most significant part of EE courses as all skills and techniques are theory-based. Also, Know-what enables students to gain the knowledge and understanding of who, and what is significant in an attempt to act entrepreneurially. Similarly, a large-scale study on the status of know-what competency has established a set of 26 actions significant for venture creation (Gartner & Gartner, 2003) and after that, Liao and Welsch (2008) classified it into four group; planning activities, establishing legitimacy, resource combination, and market behaviour. Know-what knowledge teaches students the basic knowledge of principles of entrepreneurship and facilitates the know-how, know-who, know-why, and know-when components (Lo, 2011).

Accordingly, know-what comprises of skills on how to scan the environment for opportunities, evolve a business idea, develop a business plan, assembling resources, marketing management, managing business risks, legal requirements, creating a business venture, and maintaining the business. Similarly, Gartner (1989) suggests that considerable knowledge of business formation is required in entrepreneurship, as well as knowing how to act in an entrepreneurial fashion. Equally, Barucic and

Umihanic (2016) suggest that the content of entrepreneurial courses should include how to identify a business opportunity, how to develop business strategy, how to acquire human and material resources, as well as how to implement the business idea. For this study, know-what compentency is necessary to create awareness about ECO and skills of starting and operating a business.

2.3.2 The Know-how Component

Know-how knowledge is know-how for the learner which addresses practical experience, or entrepreneurial how to do things (which steps to follow to attain a result) as well as functional capabilities specific to the person (Nutley, Walter, & Davies, 2003). Know-how is knowledge about how to execute a thing, principally how to do it well, can also involve knowledge specific to the person, and is often discussed concerning skills (Johannisson, 1991; Othman & Nasrudin, 2016; Souitaris et al., 2007).

In the process of executing entrepreneurial actions, entrepreneurs require skills in decision making, leadership, creativity, innovation, communication ability, skills in team building, organising, managing. Also, entrepreneurs need skills in risk-taking, analytical and logical skills, goal setting skills, and an ability to prepare a business plan (Henry et al., 2005a; Jones & Peneluna, 2013; Lazear, 2004; Albornoz Pardo, 2013; Solomon, 2007; Ismail & Ahmad, 2013). Often, students of entrepreneurship are required to prepare business plans, create a product that differs from the offerings in the market, and get a response of classmates, teachers, and guest lecturers (Johannisson, 1991).

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Additionally, the EE courses must encourage students to devise different ways of solving a common problem, and also cover the industry environment and common problems entrepreneurs face. Know-how attributes of creativity and innovation are prerogative of entrepreneurs that have different perspectives of the world. Therefore, entrepreneurial courses must train students with skills in creative thinking and problem-solving. Besides that, entrepreneurs must possess the talent to work in the learning process with a team, as such exercises and team-based events must be part of the learning process (Rabbior, 1990). Students of entrepreneurship must learn to accept failure as part of the business and be motivated. They must develop a sense of confidence with entrepreneurial success (optimism).

Similarly, entrepreneurial students must learn, in addition to learning skills and techniques required to take entrepreneurial action, to be self-motivated and accept failure as part of business undertaking (Lo, 2011). Confidence is highly associated with entrepreneurial success. Thus, the education programmes must teach students how to deal with challenges, difficulties and building up a trust (Rabbior, 1990).

Hence, EE courses must inculcate in students the ability to handle difficulties, manage the challenges, and remain confident (Rabbior, 1990). Know-how links entrepreneurial knowledge to entrepreneurial practice. Also, know-how is particularly gained in the course of the introduction of business models and concepts for the new business venture creation process. For instance, the lean start-up model (Blank & Dorf, 2012; Ries, 2011).

2.3.3 The Know-who Component

Know-who refers to networking skills (Johannisson, 1991; Souitaris et al., 2007). It involves the social capability of a person to collaborate and connect with different types of people and experts (Lundvall, 1998). Hence, entrepreneurs need to communicate and acquire relevant information, support services, and other resources from individuals considered as significant to the enterprise. For examples, they may need to interact with entrepreneurial lecturers, experts, classmates (Hussein & Hashim, 2015; Johannisson, 1991; Othman & Nasrudin, 2016).

Therefore, know-who is an essential element of EE to ensure the survival and growth of new ventures through interaction with people that are significant to new venture creation (Johannisson, 1991; Raichaudhuri, 2005; Ronstadt, 1987; Souitaris et al., 2007). In essence, know-who is an ability to interact with entrepreneurial lecturers, experts, guest speakers, local entrepreneurs, graduate entrepreneurs, colleagues, and other stakeholders. The essence of EE courses is to offer opportunities for the participants to interact with practising entrepreneurs and role models (Gibb, 2009). In effect, EE teachers should build a good entrepreneurial network and invite appropriate persons to give a talk on their courses, because students should obtain a real picture of ECO and its practice (Fiet, 2001a; 2001b; Hegarty, 2006). For this study, students need to generate new venture ideas and gain new perspectives. Hence, students need to develop links with different individuals in the entrepreneurial sphere and be able to build teams.

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2.3.4 The Know-why Component

Know-why is a person's conception of why he/she engages and persists in pursuing entrepreneurial action (labelled as know-why). Know-why competency can be seen as the values and motivations for introducing an entrepreneurial activity as well as a person's attitudes to the businesses. Therefore, developing the motivation and positive attitudes to entrepreneurship as a career option is an essential objective of entrepreneurship education. Scholars postulate that EE should go beyond know-what and know-how, meaning that the traditional skills learned in business schools are crucial but not sufficient to make successful entrepreneurs (Ray, 1997).

Based on the above argument, developing know-why is the decisive learning that is omitted from most EE programmes. Know-why is the knowledge that a person requires to recognise and legitimise his/her entrepreneurial action (Isah & Hashim, 2018; Middleton & Donnellon, 2014). Hence, individuals must be personally motivated and believe in his ability to start up a new business (Abuzhuri & Hashim, 2017; Fayolle & Gailly, 2008; Johannisson, 1991). Thus, know-why competencies are considered to be innate, but influenced by environment, and can be trained (Johannisson, 1991). Additionally, know-why asks the question 'why should I create or persevere in this new business venture? 'What does it have for me?' Know-why is enunciated as an individual's judgment surrounding both rationale and sentiment, which makes a person act in an entrepreneurial manner, primarily to set up new business ventures. The issue of know-why provides the self-understanding and decision to do and the how, stemming from a perception that entrepreneurial reason is instinctive and holistic (Johannisson, 1991).

Hence, two parts of know-why competencies are discernible; appreciating the significance of entrepreneurship to the individual and the society, and understanding the entrepreneurial profiles of students. In the first instance, an understanding of the importance of ECO to the individual, the community and the national economy is of great significance. The importance of ECO to an economy is evidenced by the emergence entrepreneurial startups, new products, innovative technologies, and many jobs created. For example, the GEM (2015) reports significant statistics about national level of entrepreneurial activity similar to domestic economic growth.

In the second instance, it is pertinent to know the values of performing entrepreneurial activities. Entrepreneurship has gained a niche as the most predominant economic activity all over the world. Individuals have different reasons for creating new businesses. Some individuals engage in creating companies to acquire personal wealth and become rich. Some develop enterprises just to sustain their families, while the desire to be their bosses attracts others (Dawson & Henley, 2012; Millman, Li, Matlay, & Wong, 2010). Others still create business ventures to be able to escape from the circle of boredom of traditional job duties they perform (Keh et al., 2002; Zhang et al., 2015).

In this study, it can be argued that some students have long desire for independence of creating their ventures. Sure, other students create business ventures to actualise their business ideas, exploit an opportunity, or realise their life dreams. To achieve their entrepreneurial aspirations, students must remain purposeful, energetic, innovative, and persistent (Solesvik et al., 2013; Yarima & Hashim, 2016). Likewise,

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the entrepreneurial process is a challenging one in which knowledge of what you do is not enough, but also why you do what you do (Keh, Foo, & Lim, 2002; Lo, 2011; Zhang et al., 2015).

2.3.5 The Know-when Component

Know-when competency refer to knowledge of insights and intuition. It involves implicit expertise about market moves, timing, and costs (opportunity and financial). Know-when imbues in the learner the knowledge of when is the right time to go ahead, what is the best condition given my profile, is this correct project for me (Hussein & Hashim, 2015; Hoe er al., 2014; Johannisson, 1991; Othman & Nasrudin, 2016). In essence, know-when competency deal with opportunity management and intuition. The teaching of know-when competency is to impart students with the knowledge to acquire sharp intuition to use the appropriate moment to act. Entrepreneurs must trust their intuition to be able to exploit opportunities that are overlooked by other people.

Hence, Johannisson (1991) argues that know-when competency can be acquired when entrepreneurs make attempts to successfully and unsuccessfully launch a new business venture. Since know-when competency imparts knowledge on opportunity management, it is appropriate that the students be taught to trust their intuitions to be able to exploit business opportunities as they are identified. The focus of the study will be better served by know-when competency because students at this level require knowledge about startup formation (Linan, 2004).

Also, teaching know-when knowledge trains the potential entrepreneur to acquire the intuition to act at the right time. Trust in one's intuition is a desirable attribute as it directs an individual to exploit an opportunity that others overlooked. Concrete entrepreneurial experience can be used to train intuition (Johannisson, 1991; Souitaris et al., 2007). Equally, he affirms that know-when knowledge accumulates as a result of entrepreneurs attempts to create a new business venture. Since real entrepreneurial experiences boost know-when competence, teaching know-when competency may be somewhat tricky. But, case study analysis, interviews with specialists and professionals can constitute useful ways to address the transfer of know-when competency to students (Fayolle, 2008).

2.4 Creativity

Research on personality often includes intrinsic motivation as an essential characteristic of creative individuals (Amabile, 1996; Shalley, Zhou, & Oldham, 2004; Zhang & Bartol, 2010). As the case of personality, states, and drives; motivation could as well be an outcome of the same process. However, creative persons tend to pursue their responsibilities and fundamental interests which intrinsically-motivated persons tend to be free from the evaluations and constraint that could hinder creativity (Runco, 2004).

The entrepreneur's primary concern is to create new products, processes or markets; and the capability of bringing something new to the market (e.g., Okpara, 2007). In this process, the entrepreneur contemplates in original thought more than any other person thinks and able to generate solutions that linger in the face of established

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knowledge (Okpara, 2007). Creativity is the power to produce new, innovative thoughts and ideas (Amabile, 1996; Matthews, 2007). Creativity is also seen as the ability to create work that is fresh and appropriate (Sternberg & Lubart, 1999).

Creativity was often used with innovation synonymously, whereas there exists distinctions between the concepts. The connection between creativity and innovation is contextual and multi-level (Sarooghi, Libaers, Burkemper, 2013). Creativity requires the generation of novel and useful ideas while innovation entails the execution of these ideas into novel products and processes (Amabile, 1996; Shelley, 2004). Thus, whereas creativity produces ideas that are new and significant, innovation is the operation of converting creative ideas into meaningful activities or results (Matthews, 2007).

2.4.1 Creativity as a Construct

Creativity is referred to as the brain function of data acquisition and progression for the reasons of problem-solving such as reactions, answers, actions or new ideas (Ofole & Ezeokoli, 2014; Okpara, 2007). Creativity affects both the unconscious and conscious processes. Creativity is the recognition of our potentials which involve the assimilation of our rational side with our instinctive side (Young, 1985). It can take innovative thinking or keep hold of associations with the past. Again, creativity is also seen equally as a deliberate and modifiable process that is identified and confirmed through the utility and uniqueness of the product made by the creative process (e.g., Bledow, Frese, Anderson, Erez, & Farr, 2009).

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Again, other scholars view creativity as springing up from an interface between the individual and the situation, helped by the appropriate environment or climate (e.g., Fadaee & Alzahrh, 2014; Fillis & Rentschler, 2010; Hunter, Laursen, & Seymour, 2007). Creativity scholars have indicated that it is inadequate to examine creativity from a trait point of persuasion entirely, granted that the prevailing environment has to be proven to impact upon behaviours that are creative (Amabile, 1998). Still, scholars are unanimous that creativity exists to a certain point in everybody and that it is a deliberate and modifiable process (e.g., Csikszentmihalyi, 2006).

Furthermore, creativity is an attribute that focuses on matters such as locus of control, self-esteem, and the effects of external and internal factors on the outcomes of actions, intransigence, and egoism. Besides, a creative individual is the product of particular patterns which form the characteristics of creative persons (Guilford, 1950). Research as well indicates that creative people are open to new experiences and that divergent thinking leads to novel and useful thoughts (e.g., Amabile, 1996; Berglund & Wennberg, 2006). Also, creativity is related to a person's approach to life, life inspiration and way of thinking (Berglund & Wennberg, 2006; Sternberg & O'Hara, 1999). Similarly, creativity is linked to ingenuity in art, science, and business and many persons have reached certain positions through their creative discoveries, practices, philosophies, and products (Eysenck, 2008). Consequently, creativity is a condition which is practised and determined by the context desired by the person.

Therefore, creativity can be considered from a personal view, process, and product perspectives (Rhodes, 1987). Individual approach to creativity refers to fields on the traits and characteristics; the process is behavioural and involves creativity techniques and creative thinking; product presumes that products are measured through measures of quality and quantity, while press refers to genes within and outside the person which affect creativity (Berglund & Wennberg, 2006).

Also, individual creativity is presumed to be a crucial component of creativity (Ford, 1996). The study of individual creativity in organisations is seen merely as the study of creativity at its origin (Woodman, Sawyer, & Griffin, 1993). Factors relating to own creativity include personality, ability, motivation, cognition, and attitudes, etc. (e.g., Redmond, Mumford, & Teach, 1993; Woodman et al., 1993; Zhou, 1998). Also, divergent thinking as the procedure of creating different ideas, is an essential feature of individual creativity in groups. Effective and inspired problem solving entails the creation of diverse and diverging probable solutions (Ford, 1996), and divergent thinking can help individuals to recognise stimulating issues and resolve creatively (Basadur, Elsperman, & Evans, 1994). Also, creativity can help an individual to view problems from different perspectives, as such, HEIs must imbibe creativity in training (Akhuemonkhan et al., 2013).

Besides, creativity is a cognitive operation that affects many stages, including; structuring of the problem, preparation, idea generation, and valuation. At the beginning phase, the problem is recognised and fixed. Secondly, data relevant to resolving the issue is gathered by the individual, and thirdly, ideas are generated.

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Lastly, solutions are tested and assessed to ascertain the extent to which it solved the problem (e.g., Malaga, 2000). Likewise, all people have natural creative powers, but the individual's natural formation, personality, motivation, and training combine to regulate an individual's creativity dispositions (Malaga, 2000).

The theory of creativity expounded by Sternberg (1995) states that creativity is a convergence of six separate but interrelated resources, namely; personality, knowledge, intellectual abilities, ways of thinking, motivation, and environment (Matthews, 2007). Again, Amabile's (1997) componential theory of creativity explains that individual creativity consists of three primary constituents; motivation, creative thinking skills, and expertise (Amabile, 1997; Cekmecelioglu & Gunsel, 2013; Fadaee & Alzahrh, 2014; Okpara, 2007; Rampersad & Patel, 2014). Expertise is the set of cognitive pathways that may be pursued in solving a given problem or answering a given task. Indeed, it is a problem solvers network of possible wanderings. It contains everything that an individual knows and can get along in the broad sphere of his or her employment regarding knowledge and technological ability (Amabile, 1997).

Meanwhile, the thinking skills in individual creativity refers to a person's way of addressing solutions to problems, which is the capacity to put existing ideas together in novel ways (Amabile, 1997). The science itself depends to an extent, on personality as well as on how a person believes and acts. Intrinsic task motivation is the effort and desire to manage something, an inner passion, and pastime. Whereas expertise and creative skills determine what one can do, it is task motivation that sees

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the magnitude to which one will enthrall his knowledge and creative skills entirely in the service of artistic performance (Amabile, 1997).

Also, Carson (2010) developed the CREATES brain set theory of creativity. The hypothesis posits that individual creative minds as the most fundamental asset in the ever-dynamic global environment. As such, developing one's creative potentials will lead to higher success and fulfilment in one's personal and official lives (Carson, 2010). The model of seven brain set was set over the acronym 'creates' brain set of creativity. A piece of the seven brain sets can impact on how an individual think, approach problems and perceive the cosmos around him/her (Carson, 2010).

Essentially, the seven brains set theory of creativity emerged from discoveries of neuroimaging and psychological testing of extremely creative individuals (Eby, 2011), and the seven brain sets were seen as similar to the brain what mindsets are to the mind (Carson, 2010). These brains set named as; connect, reason, envision, absorb, transform, evaluate, and stream as classified. Agreeing to the CREATES brain set, an individual is assisted in building link between objects that are incongruous with the aid of the 'connect' brain set. This region of the brain allows persons to create many different solutions to a problem rather than concentrating on a single solution (Carson, 2010). Adjacent to this brain set is the 'reason' brain set that is responsible for deploying information in a person's active memory towards solving a problem. It is responsible for an individual's daily planning and consciously directed mental activities. When an individual is absorbed in sober thought about something, he has accessed this brain site (Carson, 2010).

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Further, the 'envision' brain set lets the individuals think visually instead of verbally. A person retrieving this brain set can comprehend and control objects in his mind's eye. Likewise, the fourth in the stream is the 'absorb' brain set which permits individuals to open their minds to ideas and experiences. This brain sets direct individual attention to be attracted and charmed by everything.

Furthermore, the 'transform' brain site allows a person in retrieving it to be in a self-conscious and dissatisfied state of intellect. The transform brain set can be applied to transmute negative energy into works of art and great execution. A soul can be prompted to lay across his pains, his anxieties, and his hopes in creative form (Carson, 2010). Preceding this brain set is the 'evaluate' set of the brain, which once retrieved, a person can consciously evaluate the value of ideas, concepts, products, behaviours of individuals. It permits an individual to assess one's creative ideas to assure that they conform to one's conception of usefulness and appropriateness. It is the critical eye of mental activity (Carson, 2010). Lastly, the 'stream' brain set allows an individual's ideas and actions to flow in a stable and harmonious sequence as if it were orchestrated by outside powers. It is linked to the invention of creative materials such as painting, scripture, narrative writing, improvisation, etc (Carson, 2010).

2.4.2 Characteristics of Creative Individuals

Recent literature on creativity, however, has paid attention to scientific interpretations, the impact of engineering and artistic creation, and any association with entrepreneurship was restrained to the application of the result of a creative

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turn. Moreover, creativity research faces the challenges of uncovering the general truth about the characteristics of creative people, because so many things seem accurate about more or less original people but not necessarily all of them (Sternbergs, 1999). Additionally, Sternbergs advised that the education system should not solely seek to enhance creativity but should directly teach students about creativity itself so that they can gain explicit awareness and realising their creative potentials and how to raise it.

People are born with domain-specific abilities; for example, some people are more endowed with art or music than others (European Commission, 2008; Fillis & Rentschler, 2010). Some scholars look at creativity as something that can be taught, while others stated that creativity is inborn and can only be facilitated (Fillis & Rentschler, 2010). Once more, it was reported that whereas all people are to some extent creative, in that respect are incredibly creative students with positive attributes like originality, involvement, persistence, independence, and detachment (Puhakka, 2008). Other distinctiveness of creative individuals is; seeming to harbour opposite tendency on the continuum of extroversion and introversion; remarkable, and tested at the same time. In essence, creative individuals are to some extent specific and are not gender role stereotypes and tend toward androgyny. They are rebellious and independent, passionate about their work. However, they are objective about it as quickly. In conclusion, creative people are exposed and sensitive which sometimes presented them to bear pain, but likewise a great enjoyment (Tunis, 2007).

In his study, Mumford (2000) identified independence, the drive to achieve, curiosity, self-confidence, and deep engagement in a task as the five main features of the relatively more creative persons. Similarly, Selby, Shaw and Houtz (2005) described the creative individual as having qualities such as forbearance, playfulness, inquisitiveness, sensitive to problems, risk-taking ability, good sense of humour, adaptable, intuitive thinking, stubbornness, make-believe thinking, rejection of authorianism, and inclination to grow. While, the entrepreneurial person has attributes such as self-confidence, high vitality levels, perseverance, the need to achieve and calculated risk-taking. Other relevant features of creative individuals include using one's initiative and being flexible.

Therefore, creative individuals can get fresh ideas but may be unable to sell or supply them. Thus, they become non-innovative (Anderson, Potocnik, & Zhou, 2014). A creative individual is an innovator, but not all creative people are necessarily innovative (Fadaee & Alzahrh, 2014). The process of transforming new creative minds into new goods and services is suggestively precious by variations in psychiatric hospitals, governing bodies, cultures, and external atmosphere (Shalley, Zhou, & Oldham, 2004). Besides, earlier written reports in psychology attempt to identify the nature and characteristics of the creative individuals (Csikszentmihalyi, 2007). Creative persons were identified as possessing immense energy, but they are often tranquil and at rest; tend to be smart yet naïve; have a combination of playfulness and discipline; alternate between fantasy and imagery on the one goal, and a firm sense of reality on another target.

2.4.3 Creativity in Entrepreneurship

Creativity plays a substantial role in the blurry facade end of a firm's innovation and corporate venturing processes, only the connection between innovation and creativity lacks clarity (Matthews, 2007). Entrepreneurship is an innovative behaviour that has frequently been viewed as an act of creativity, and those creative souls are more likely to carry on to entrepreneurial behaviour (Fillis & Rentschler, 2010; Ward, 2004). Intuition can be considered as a critical function of business proficiency which is tended by the power to be creative. Previous studies argued that creative people are exposed to new experiences and that useful and fresh ideas are the products of divergent thinking (Amabile, 1996). Therefore, previous studies have shown that creativity is a precursor of EIs (Katz, 2003; Kuratko, 2005; Pittaway & Cope, 2007). Likewise, it was noted that the higher the creativity levels of individuals, the more likely the individuals are to engage in entrepreneurship (Hamidi et al., 2008).

2.4.4 Why invest in creativity?

The literature on creativity and entrepreneurship is sparse in spite of the fact that enterprise was described long time ago by Schumpeter (1947), as a process of creative destruction. Earlier studies (Stein, 2014) claimed that artistic ability and entrepreneurial ability are separate constructs, but later studies had found a connection between creativity and entrepreneurship (Hamidi et al., 2008; Lee et al., 2004; Shalley et al., 2004).

Also, creativity, competence has been distinguished as the associations necessary to produce novel products that enable entrepreneurial success (Ko & Butler, 2007). Also, skills in creativity would allow individuals to create novel ideas and reveal new entrepreneurial opportunities that play a role in innovative activities. Likewise, the skills in creating that a student acquires influences his self-perceptual experience of creativity that they may change their creative talents to co-workers that may contribute to a substantial impact on the perception of co-worker's support for innovation and their innovative outcomes (Gundry, Ofstein, & Kickul, 2014). Further, Duxbury (2012) proposes the establishment of supportive structures or teams of creative individuals and championing ideas to generate the resources necessary to enable innovative outcomes. Afterwards all, ingenuity and creativeness in finding ways tallied to their prestige, power, and wealth specific qualities of entrepreneurs (Naude, 2010).

Furthermore, Florida (2002) argues that creativity is a fundamental requirement in a nation's economic growth and prosperity, and he posits that knowledge possessed by an individual does not matter most, but whether the individual is creative or not. He further added that creativity could best be evaluated through the profession of an individual. Hence, people may be educated, but yet not creative (Faggian, Partridge, & Malecki, 2017). Furthermore, entrepreneurial success, on a moderate level, entrepreneurial success depends on creativity.

The previous study conducted by Ofole and Ezeokoli (2014) indicated that 8 out of every ten persons feel that unlocking creativity among youth is critical to economic

growth. Also, the study showed that about two-thirds of the respondents in the survey believed that creativity is valuable to society but yet only one out of every four persons think that they do not live up to their potentials in creativity (Ofole & Ezeokoli, 2014). It is given this, however, that this study establishes a relationship between EE, creativity, and ECO within a single framework. The researcher did not come across a similar study which examined the constructs in a unique context.

2.5 Hypothesis Development

This section of the study consists of hypotheses development where the relationship among all the variables were empirically tested and validated. The study constructs include the following; know-what (KWT), know-how (KHW), know-who (KWO), know-why (KWY), and know-when (KWN). Creativity (CRT) is the mediating variable and entrepreneurial career option (ECO) is the dependent variable.

Previous studies have demonstrated a remarkable significant relation between components of EE and entrepreneurial career option (Abuzhuri & Hashim, 2017; do Paco & Raposo, 2011; Hussein & Hashim, 2015; Isah & Hashim, 2018; Souitaris et al., 2007; Von Graevenitz, Harhoff, & Weber, 2010). Consequestly, the respective components of EE were discussed and hypothesised concerning their relationships with ECO in the subsequent portion of the study.

2.5.1 Know-what and Entrepreneurial Career Option

Entrepreneurial know-what refers to encyclopedic knowledge of entrepreneurship. It is the knowledge of what to do to perform enterprise (e.g., Hussein & Hashim, 2015;

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Johannisson, 1991; Othman & Nasrudin, 2016; Souitaris et al., 2007). Previous studies suggest that know-what (theoretical knowledge of entrepreneurship) is positively related to students' ECO (e.g., Ahmed et al., 2010; Hussain & Hashim, 2015; Fatoki & Oni, 2014; Henderson & Robertson, 1999; Ismail & Ahmed, 2013; Marques, 2015; Matlay, 2008; Muofhe & du Toit, 2011; Njoroge & Gathungu, 2013; Packham et al., 2010; Rae & Woodier-Harris, 2013).

In a study conducted to investigate the relationship between EE and EI among university students, a significant positive correlation was found between know-what and know-who knowledge and EI (e.g., Hussain & Hashim, 2015; Bae et al., 2014). Likewise, other studies reported a positive impact on the perceived effectiveness of EE and university students' career aspirations (e.g., Fatoki & Oni, 2014; Henderson & Robertson, 1999; Jones, Jones, Packham, & Miller, 2008). Prior research also indicates that EE encourages students to choose ECO and taught the skill of business plan preparation but did not prove helpful in helping pupils to meet people with good venture ideas (Fatoki & Oni, 2014). The same survey also reported that definite descriptions of entrepreneurship are limited due to the inadequacy of distinguished models, unfortunate demonstration of the mass media, of individuals or small firms, and insufficiency of backing from essential promoters of vocational choice such as career guidance specialists and teachers (Henderson & Robertson, 1999).

Equally, a conceptual article study suggests a positive impact of EE on EIs. The report offered some insights about EE; the meaning of EE and explains the importance of the growth of educational plans. Results show a positive impact of EE

and solicit improved governments support for finances and the usage of the correct educational programmes (Raposo & Do Paço, 2011). It also indicated that the appropriate way of evaluating EE is the rate of new job creation, but conclude that the effects of such programmes are not immediate (Raposo & Do Paço, 2011). Thus, whereas large amounts of money are being spent on financing EE courses, governments must not lose hope on the overall impact of EE programmes, the effects of these plans would be felt later.

In Nigeria, a similar study indicated that the teaching of EE to students of HEIs has no substantial positive effect on capacity building and the consequent formation of micro and medium scale enterprises (SMEs) in Nigeria (Mamman, 2014; Musa & Adewale, 2015). Therefore, the researcher hypothesised that:

H1: There is a significant relationship between know-what and entrepreneurial career option.

2.5.2 Know-how and Entrepreneurial Career Option

Know-how knowledge refers vocational skills. It is the knowledge of technical and professional skills with which to perform entrepreneurship (Johannisson, 1991). Previous literature suggests that entrepreneurial know-how has a positive relationship with ECO (e.g., Johansen, 2013; Idris & Rajjuddin, 2012 Jones et al., 2012; Lisi & Pugno, 2015; Maina, 2014; Muhammad, Haneef, & Abubakar, 2013; Ulvenblad, Berggren, & Winborg, 2013; Huber, Sloof, & Praag, 2012; Ogbonna, 2015; Solesvik, Westhead, & Matlay, 2014).

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An investigation directed to look into genes that determine university students' EI in Malaysia using the theory of planned behaviour indicates that power of behavioural restraint and personal attitudes are the significant determinants of startup (Muhammad et al., 2013). In summation, they found mediating effects of individual beliefs and power on behavioural control. Another survey conducted in Norway found a specific relationship between EE and start-up activity among secondary school pupils. Their analysis further shows that CP impacts more on vigorous startup activity as compared to women (Johansen, 2013). The result suggests that there a positive association between CP and startup activity and that a male student that has participated in the CP is more apt to go up than female students that causes as well attended the programme. The findings further suggest that a gender dimension to entrepreneurship can be a real field of future entrepreneurial research.

A similar survey conducted in Sweden indicates a substantial association between EE experience and enhanced communication among entrepreneurs from three Swedish universities. The investigation revealed that EE experience of entrepreneurs' means more enhanced skills in the dimensions of openness and adjustment, whereas other facets of other-orientation were discovered to be ascertained by previous start-up experience (Ulvenblad et al., 2013).

Likewise, in Ukraine, Solesvik et al. (2014) found mixed results in a written report to explore the nexus between local cultural environment, cultural value theory, ESE investment, and intensity of EIs. The survey found that students who cited alleged attractiveness and perceived viability for entrepreneurship, resourcefulness attractive,

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and cultural partaking in ESE testified suggestively higher intensity of EI. However, students that quoted the competence beliefs, values feature reported the meaningfully lower strength of purpose. Also, ESE connections with seeming cultural factor, seeming feasibility and seeming desirability for entrepreneurship, are not significantly linked with the advanced intensity of EI (Solesvik et al., 2014). Also, Huber et al. (2012) institute a significant relationship between EE and non-cognitive entrepreneurial skills. Similarly, Idris and Rajjuddin (2012) found that teaching entrepreneurial skills in technological and vocational schools in Kano, Nigeria through problem-based method, context-based, student-centred, demonstration, and computer-based techniques significantly predict entrepreneurship. Therefore, the present study hypothesised that:

H2: There is a significant relationship between know-how and entrepreneurial career option.

2.5.3 Know-who and Entrepreneurial Career Option

Know-who knowledge refers to learning networking skills (Johannisson, 1991; Nabi et al., 2006; Souitaris et al., 2007). More studies have linked entrepreneurial career to social network relationships and the existence of mentors (e.g., Abaho, 2013; Akhuemonkhan, Raimi, Patel, & Fadipe, 2014; Gwija, Eresia-Eke, Iwo, 2014; Pruett, 2012; Ragins, Cotton, & Miller, 2000; Rani, 2016).

In a survey directed at investigating the character and impact of mentorship on the probability of university students' ECO produced a substantial positive effect (Eesley & Wang, 2014). Using a longitudinal, randomised, controlled field experiment, the

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study test whether being mentored by an entrepreneur receives a different impact in EE compared with mentoring from a non-entrepreneur with relevant industry experience. The findings show that entrepreneurial mentors have a healthy positive outcome on the rate of entrepreneurship. The result, however, found that the most considerable influence on ECO was seen on students with particular risk orientation and those from an entrepreneurial family background (Eesley & Wang, 2014).

In Nigeria, a similar study indicates mixed result on the relations between EE and employment stimulation (Akhuemonkhan et al., 2013). Their study examines EE and employment stimulation in Nigeria and uses quantitative research method to study the relationship between EE and unemployment. The determinations of the study reveal a significant positive correlation between EE and crime rate in Nigeria. The survey found, nonetheless, a negative relationship between EE and unemployment, i.e. the higher the level of EE the lower the rate of unemployment (Akhuemonkhan et al., 2013).

Again, another survey conducted by the author found less impact of Technology Incubation Centers (TIC) in Nigeria and the origination of more businesses, the creation of more wealth and industrial development compared to TICs in emerging BRICS nations (Brazil, Russia, India, China, & South Africa). TICs have impacted positively on business creation, wealth creation, and economic growth among BRICS nations. Conversely, Musa and Adewale (2015) assess the effects of EE on a willingness to own personal business by university students in Nigeria and found that EE accounts for 6 percent of the variation in students' desire to hold private

companies (Musa & Adewale, 2015). Thus, they suggested for the review of the entrepreneurship course curriculum to move off from classroom theoretical EE in favour of more practical and mentoring entrepreneurship training.

In a similar work in Malaysia, Rani (2016) reported positive findings on the influence of psychosocial factors; social support, employment experience, and mentoring on the entrepreneurial quality of graduate entrepreneurs in Malaysia. Social support was found to be positively connected to the entrepreneurial quality among graduate entrepreneurs. Again, work experience was found to cause no significant relationship with entrepreneurial quality between graduate entrepreneurs, and that graduate entrepreneurs are believed to have mentors who assist them to acquire and increase their entrepreneurial quality by having the advantage of access to successful entrepreneurs (Rani, 2016). In South Africa, a study found that lack of awareness and inaccessibility of youth entrepreneurship support in the community inhibits entrepreneurship development (Gwija et al., 2014). Nevertheless, the hindrance does not terminate the growing enthusiasm of early days to engage in ECO. The findings further revealed that growing an entrepreneurial mindset among students is imperative in promoting entrepreneurship as a career choice (Gwija et al., 2014).

Likewise, a survey conducted in Uganda found a final tie between an improved curriculum and the advancement of the development of entrepreneurial values among universities. The study found that students who have links to booming entrepreneurs, entrepreneurship lecturers, and experiential learning lead to high levels of

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entrepreneurial standards amongst students (Abaho, 2013). Furthermore, a multinational study reported a significant positive impact of EE on entrepreneurial mindsets of students in the USA, Canada, Mexico and Puerto Rico (Peltier & Scovotti, 2010). Also, scholars who were exposed to entrepreneurial marketing tools, networking opportunities, and experiential learning activities desired to be entrepreneurs and feel strongly about EE (Peltier & Scovotti, 2010).

However, a study by Sesen (2013) compared university students' personal and environmental factors on students' EIs, as well as assessing their influence. Outcomes suggest that individual factors such as entrepreneurial self-efficacy (ESE), the locus of control, social web, and access to capital have significant positive impacts on EIs of students. Results, however, indicate a no significant impact of university environment on students' EIs (Sesen, 2013). Therefore, analysis of the studies suggests that social network, self-efficacy, entrepreneurial mindsets play a more significant role than government support in influencing ECO among graduate students. Therefore, the present study hypothesised that:

H3: There is a significant relationship between know-who and entrepreneurial career option.

2.5.4 Know-why and Entrepreneurial Career Option

Know-why competencies are in-born competencies which presume that a person must be personally engrossed and convinced that he is adept at starting a new venture and opening a career in entrepreneurship. Know-why skills are the attitude, values, and motivation of the students in EE. Know-why determines human behaviour and

actions, entrepreneurs' attitudes, values, and motivation; and what lead common men to do as entrepreneurs do. In simpler terms, know-why knowledge is intended to enhance the students' self-efficacy, their motivation for achievement, and risk-taking propensity in the framework of the growth of the entrepreneurial spirit, access to mentors, and role models (Asghar et al., 2016; Bae et al., 2014; Udu, 2014; Sondari, 2014; Ogundele et al., 2012).

A survey conducted by DeMartino and Barbato (2003) explored motivational differences using a sample of MBA entrepreneurs. Comparisons were drawn between male and female entrepreneurs who are alike about business training, educational qualifications, and other essential variables. Logistic regression was used to evaluate the connection between gender and career motivators, and between gender attuned for marital status and the existence of dependent kids and career incentives.

Equally necessary is a study conducted using the theory of planned behaviour to test the effect of entrepreneurship programmes of science and engineering students' EIs and attitudes, to confirm or disconfirm common belief that EE increases the intention to start a business venture. A pre-test-post-test control group design was adopted. The results show that the programmes increase some attitudes and the general EIs and those inspirations are the programmes' most significant benefit (Souitaris et al., 2007). A similar study using TPB found no significant influence of attitudes on the EIs of students (Zhang et al., 2015). Likewise, an extended theoretical discussion was guided by empirically exploring people's attitudes to job characteristics and career selection. The study found that people do consider risk, independence, and

income when assessing a substitute career option. The sample showed an aversion to danger and a preference for both more autonomy and higher income (Douglas & Shepherd, 2011).

In Nigeria, another study discovers no significant association of EE and university female students' entrepreneurial mindset. The survey examines the entrepreneurial mindset of female students and their perception of entrepreneurship, role model, and the university's role in promoting entrepreneurial mindset. Findings suggest that there is no significant positive relationship between EE and entrepreneurial mindset of female university students (Israel & Johnmart, 2015). Still, in Nigeria, a study was conducted to examine the association of sex, age, the locus of control, socioeconomic status, EIs and entrepreneurial self-efficacy among Nigerian adolescents. The survey discovered a significant positive association of locus of control, entrepreneurial self-efficacy, socio-economic status with EIs of adolescents; while age and gender were not (Ayodele, 2013).

Likewise, a field experiment was conducted in a cross-cultural setting to study the issue of social and psychological factors on EIs and it revealed positive impacts. The result indicates that students share similar views concerning motivations and barriers to entrepreneurship but with differences among cultures. Further, the study found that self-efficacy is a significant predictor of intention, while social and cultural dimensions clarify only a small portion of intention (Pruett, Shinnar, Toney, Llopis, & Fox, 2009).

The findings indicate that the entrepreneurs' country of origin, entrepreneurial family background, entrepreneur's disposition, his/her attitude towards independence, his opportunity given for creative work (Pruett, Shinnar, Toney, Llopis, & Fox, 2009). Therefore, individual (attitudes, mindset, education, motivation, and inclination), social (family background, socioeconomic position), and psychological components (self-efficacy beliefs, the locus of control) combined to influence the student's intention to start a business in a near future irrespective of being a male or female student. Given the preceding, the study hypothesized that:

H4: There is a significant relationship between know-why and entrepreneurial career option.

2.5.5 Know-when and Entrepreneurial Career Option

Know-when refers to knowledge of insights and intuition (Johannisson, 1991). Previous studies claimed the existence of a relation between know-when competency (insights and intuition) and ECO (Pruett, 2012; Chou, Shen, Hsiao, Hsi-Chi, & Chen, 2014). Know-when competency is learned through concrete experience, but can also be imparted through case studies and exercises.

In a study to examine the effectiveness of internship training and influence on IT industry among 324 students, findings indicate a positive effect. Entrepreneurial internship effectiveness directly impacts upon students' entrepreneurial intention (EI), and internship satisfaction (IS) delivers a substantial impact on entrepreneurial internship effectiveness. The influence pattern and empirical data on relationships of internship satisfaction and EIs on entrepreneurship internship effectiveness have a

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good fit (Chou et al., 2014). Another study tested the influence of EE workshop series on social and psychological elements of students EIs. Analysis of variance, t-tests, and linear modelling results suggest that entrepreneurial disposition and participation in the workshop are significantly inclined to intentions, exposure to role models and the strength of family support did not significantly impact upon intentions. In contrast to earlier subjects, there were no substantial differences between male and female with regards to the significance of entrepreneurship (Pruett, 2012). Therefore, the present study formulates the hypothesis that:

H5: There is a significant relationship between know-when and entrepreneurial career option.

2.5.6 Creativity and Entrepreneurial Career Option

In the first place, entrepreneurial creativity was viewed as the generation and implementation of ideas that are appropriate and novel to create new business ventures (Amabile 1997; Ward, 2004). Entrepreneurial creativity is said to exist before, at some point in, and later on the life of a particular occupation, and it is determined by the decision maker and social environment he found himself (Fillis & Rentschler, 2006). Again, it was said that entrepreneurial activity also requires an environment that permits innovation and creativity to thrive (Lee et al., 2004). Intuition is a critical function of business proficiency which is tended by the power to be creative. Inquiry argues that creative people are exposed to new experiences and that useful and fresh ideas are the products of divergent thinking (Amabile, 1996). Therefore, it is least surprising that creativity has been indicated as a precursor of EIs (Gorman et al., 1997). Likewise, it was noted that the higher the creativity levels of

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individuals, the more likely the individuals are to engage in entrepreneurship (Hamidi et al., 2008).

Nevertheless, creativity has also shown a direct and positive effect on entrepreneurial intentions, and gender showed an interaction with creativity such that creativity had a stronger relationship with intentions among women (Smith et al., 2016). Furthermore, the study established that individuals who worked on a complex initial task for a short interval or a simple job for a long range showed higher subsequent job creativity than those in other employment and time interval situations (i.e., complex–long intermission and simple–short intermission). Moreover, these results were reasonably explained by ones' positive disposition state (mood state) that had been measured instantaneously after the accomplishment of the initial task (Madjar & Oldham, 2002).

Another study tests the connection between creativity and EI in adolescents and the roles of family and education in promoting the link showed that student's creativity mediates the force of family support for creativity. The survey found that the more creative young people perceive themselves to be, the higher their EIs. Likewise, findings show that students' creativity mediates the force of family support for creativity on students' EIs. Other authors found that expertise and creative self-efficacy significantly links to entrepreneurial creativity (Dayan, Zacca, & Benedetto, 2013). Their survey found that creativity mediates between contextual factors (resource access, resource ownership, and alertness to entrepreneurial opportunity) and entrepreneurial creativity.

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Similarly, creativity was found to be positively linked with employee performance on the task and was set up to be positively associated with employee's transformational leadership and learning orientation (Gong, Huang, & Farh, 2009). Also, Bodla & Naeem (2014) found a mediation of creativity on intrinsic motivation and sales force execution. The study further explained that creativity was found to motivate the inherent innate of sales creative performance (Bolda & Naeem, 2014). Similarly, creativity was significantly mediated by employee's mood states and innovative achievement and support creativity relationships, and that employees' mood states mediate the support-creativity relations (Madjar et al., 2002).

Besides, creativity has a confident and direct relationship with the identification of entrepreneurial opportunity. Also, creativity has an immediate and positive effect on the goal of individual entrepreneur motivation. Again, creativity and personality trait optimism have a direct and positive relationship. Similarly, creativity mediates significantly between the purpose of personal entrepreneur and entrepreneurial opportunity recognition. Additionally, creativity mediates considerably between entrepreneurial opportunity identification and the personality trait of optimism (Jia-Yun, 2016).

Conversely, the association of creativity and EIs is mediated by ESE, confirming that individuals are required to feel sufficiently self-efficacious to trail an ECO. The findings also lay support for an understanding of the nascent entrepreneurial phenomenon within a particular area of interest (Biraglia & Kadile, 2017). Although differences may exist in meanings between being creative and being entrepreneurial,

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the two concepts overlap in a sense (Fillis & Rentschler, 2010). Entrepreneurship is seen as a significant contributor to economic growth and employment creation, while creativity makes a meaningful impact on the process of enterprise (Baumol, 2002). Thus, an interaction of how creativity plays a part in the entrepreneurial process is crucial (Baumol, 2002). Creativity is an essential component of entrepreneurship because entrepreneurs must be able to recognise business opportunities, generate ideas, and innovate (Schumpeter, 1934).

On a gender perspective, Hayes (2014) sought to know the interface between gender and creativity with the mediation of life roles and goals. The empirical results show that gender had a stable relationship with creativity and women EIs (Hayes, 2014). The above findings suggest for the inclusion of exercises involving creativity in the EE curriculum and to create tailor-made plans to increase women's EIs (Smith et al., 2016). Based on the foregoing, the current study hypothesised that:

H6: There is a significant relationship between creativity and entrepreneurial career option.

2.5.7 Know-what and Creativity

Ward (2004) describes creativity as a process that entails the generation of novel and useful ideas for business ventures, whereas KWT refers to the theoretical component of knowledge of EE. Knowledge is the building block of EE because all other parts depend on it. Knowledge management brings specific benefits to the organisation regarding self-confidence, decision effectiveness, loyalty, quality, knowledge, and culture (Chelmecka, 2018). Knowledge is a capital investment which fosters

creativity, innovation, and competitiveness (Chelmecka, 2018). Skilful knowledge management creates conditions for the development of individual creativity. Previous studies confirm the positive relationship between creativity, learning, competence, and competitiveness (Batey, Furnham, & Safiullina, 2010; Chelmecka, 2018; Karimi, Biemans, Lans, Chizari, & Mulder, 2016; Mitra, Abubakar, & Sagagi, 2011). A study by De Clercq and Arenius (2006) indicate a stronger effect of a knowledge-based factor on the decision to engage in a start-up entrepreneurial activity. Also, findings suggest the existence of differences among countries for the knowledge-based outcomes, especially about business start-up growth orientation.

Equally, a positive relationship exists between intelligence and creativity (Jensen, 2000). An individual's intelligence facilitates the expansion of a well-organised knowledge base, which makes it easier to repossess ideas, transmit new information into current plans, and to manipulate thoughts in new and exciting ways (Ward & Kolomyts, 2010). Nevertheless, highly intelligent people are not necessarily incredibly creative, but some quantity of intelligence is essential for artistic accomplishment (Johnson, 2014). In fact, the line between knowledge and creativity can turn out to be unclear as both are influential in solving problems.

Equally, prior research indicates that knowledge is a necessary condition for creativity (Coleman & Cross, 2001; National Research Council, 2000). Creativity involves manipulating ideas from the base of knowledge. The existence of knowledge makes the manipulation possible. Impliedly, it is significant to have well-structured curricula that present students with a reasonable amount of experience in

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an organised fashion. Precisely, a body of knowledge increases students' ability to think creatively and to solve problems (e.g., Chi, 2014; National Research Council, 2000).

Prior research established a significant positive association between the dimensions of knowledge and creativity. For example, Mitra, Abubakar, and Sagagi (2011) found a significant positive association between knowledge creation, human capital, and entrepreneurship. Also, Sirelkhatim and Gangi (2015) investigate standard and best practice concerning curriculum content and teaching approach of EE. The results indicate that the curricula content and teaching approaches differ subject to the programme's objectives and it ranges from theory base courses targeting to raise entrepreneurial awareness to practical-oriented ones that seek to produce graduates equipped to create a business. Essentially, practical-oriented courses relate to entrepreneurial learning propositions for practices to engage students in attaining competencies in entrepreneurship. Equally, Karimi et al. (2016) observed that students who participated in EE courses have a higher level of divergent thinking than those students who have not and that knowledge of EE has a significant effect on students' capacity to generate innovative business ideas. HEIs they noted, play an essential role in the creation of knowledge and HC for the enterprise. Therefore, the present study hypothesised that:

H7: There is a significant relationship between know-what and creativity.

2.5.8 Know-how and Creativity

Know-how knowledge denotes technical skills. Skills refer to competencies that will influence an individual's entrepreneurial practice. Entrepreneurial skills include managerial and technical skills. Previous research established a definite link between skills and creativity (Ayoola et al., 2011; Bae et al., & Fiet, 2014; Gundry et al., 2014; Hytti & O'Gorman, 2004; Lazear, 2004; Lisi & Pugno, 2015; Ngwoke et al., 2013).

Prior research found that creative skills developed by students are shown to influence their self-perceptions of creativity, which was transferred to their creative talents to their work teams, leading to a positive influence on perceptions of team innovation support and their firm and team's actual innovative outcomes. Pedagogical methodologies play an essential role in students' ability to copiously partake in their teamwork, as well as their ability to generate value to their organisations (Gundry et al. 2014).

However, the study of Sarri, Bakouros and Petridou (2010) indicated that entrepreneurs and managers of micro and small enterprises (MSEs) in northern Greece are conscious of the significance of creativity and innovation, believing that these are positively linked to each other and interact in the maturation of their occupations. Also, training intervention is regarded with great importance, and the obstacles concerning infrastructure, time, financial resources, experience, and not risk-averse, were played up. Therefore, the current study hypothesized that:

H8: There is a significant relationship between know-how and creativity.

2.5.9 Know-who and Creativity

KWO refers to social networking skills and an ability to communicate and cooperate with stakeholders and experts in the entrepreneurial universe. Previous literature suggests a positive association of KWO and CRT (Bosma, Hessels, Schutjens, Praag, & Verheul, 2012; Martin-Sanchez, Contin-Pilart, & Larraza-Kintano, 2018; De Carolis, Litzky, & Eddleton, 2009; Gimmon, 2014; Laviolette, Lefebvre, & Brunel, 2012; Lourenco & Jayawarna, 2010; Munoz-Doyague, & Nieto, 2012; Perry-Smith, 2006). The study of Gundry et al. (2014) investigates the impact of perception of creativity skills acquired by 137 MBA part-time students who were as well full-time workers. The findings indicate that creativity skills learnt by students influenced their self-perceptions of creativity and that students transfer their creative talents to their work groups, leading to a positive influence on insights of team support for innovation, and their group and firm's tangible, innovative results. Equally, the likes of Chang, Benamraoui, and Rieple (2014) found that learning-by-doing develops entrepreneurial skills among students as well as promotes their knowledge of social businesses. Based on the preceding, the current study hypothesized that:

H9: There is a significant relationship between know-who and creativity.

2.5.10 Know-why and Creativity

Previous studies show a definite connection between KWY and creativity (Block, Sandner, & Spiegel, 2015; Fatoki, 2010; Kirkley, 2016). Block et al. (2015) found that entrepreneurs motivated by opportunity are more willing to take risks than necessity entrepreneurs. Also, entrepreneurs motivated by creativity are more risk-tolerant than other entrepreneurs. Equally, Kirkley (2016) advanced four specific

values that are critical to the motivation of entrepreneurial behaviour, including; creativity, ambition, daring, and independence. These values are consistent with features associated with self-determination, self-efficacy and the uniqueness of participants related to entrepreneurship. Similarly, Fatoki (2010) explores the motivators and obstacles to EIs among the South African HEIs graduates. The study used a sample of 701 final year students and collected data through self-administration. The result of data analysed through descriptive statistics, principal component analysis, and t-test revealed that the motivators of EI were found to be creativity, autonomy, economy, capital, and employment. Also, the study found that the EIs of South African students are very feeble. Furthermore, the entrepreneurial study skills, money, government support, crime, economy, and risk were found to be the primary impediments to EI of South African graduates. Hence, the present study developed the hypothesis that:

H10: There is a significant relationship between know-why and creativity.

2.5.11 Know-when and Creativity

Know-when refers to intuition and insight (Johannisson, 1991). Scholars explained that one could impart creative intuition through experimental studies, analysis of historical testimonies, autobiographical evidence, and psychometric assessment (Policastro, 1995). Bastrick (1982) refers to intuition as a form of foresight, or the ability to see the end in the distance, under conditions where the individual is working on an original, multifaceted, and ambiguous task the kind of function associated with creative thought (Mumford & Gustafson 1988).

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Prior research indicates that expertise and experience play an important role in automatic processing, and link intuition to domain-specific knowledge and experience (e.g., Epstein, 2010). Entrepreneurial intuition denotes a type of intuition that involves combining different expertise and elements to create combinations that are novel (Crossan, Lane, & White, 1999; Dane & Pratt, 2009). They further argued that this intuition depends on individual's knowledge base than on their creative ability to identify possibilities and gaps (Dutta & Crossan 2005, p. 436).

Prior research indicates a significant relationship between KWN and CRT (Dane, Baer, Pratt & Oldham, 2011; Kaufman, 2009; Sadler-Smith, 2016). Intuition is related to affect which is a judgment that arises through rapid, non-conscious, and holistic association (Dane & Pratt, 2007). Further, scholars explained that one could impart creative intuition through experimental studies, analysis of historical testimonies, autobiographical evidence, and psychometric assessment (Policastro, 1995). Teachers can transfer KWN knowledge appropriately through concrete experience. Though scholars have claimed difficulty in teaching know-when to students of EE that lack practical entrepreneurship experience, given that knowledge of know-when is attained through real experiences (Lo, 2011).

Baron and Ensley (2006) explained that new opportunities in business are recognised when entrepreneurs, through appropriate cognitive arrangements, connect dots between apparently unconnected events or tendencies and then discover patterns in this association signifying new products or services. However, the entrepreneurial environments are characterised by intense personal commitment, deep emotional

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involvement, high risk, and pressure of time (Baron 2008), and entrepreneurs make decisions and judgments under uncertain conditions (McMullen & Shepherd, 2006). Hence, intuition plays a vital role in entrepreneurship (Baldacchino et al., 2015). Given the above, the present study hypothesized that:

H11: There is a significant relationship between know-when and creativity.

2.6 Mediating Effect of Creativity on Components of EE and ECO

Creativity generates new ideas by changing, merging, or reapplying existing ideas rather than making something out of nothing (Amabile, 1997; Harris, 1998; Molaei, Reza Zali, Hasan Mobaraki, & Yadollahi Farsi, 2014). Creativity requires the production of raw ideas or the recombination of recognized elements into rather new, providing valuable answers to the existing problems (Amabile, 1996). Some creative ideas are astounding and radiant, while some others are simple, safe, practical minds that no one might have guessed about them previously (Harris, 1998). Several studies have shown a close association between creativity and entrepreneurship education and between creativity and entrepreneurial career option. Also, some studies have used creativity as a mediator between the independent and the dependent variables (e.g., Bodla & Naeem, 2014; Gong et al., 2009; Madjar, Oldham, & Pratt, 2002).

Nevertheless, previous findings in relation to the current research variables have reported different proportions of results such as the studies of GBSN (2013), Hamidi et al. (2008), Lourenco and Jayawarna (2011), Wennberg, Hamidi, Panasenco, and Stanaityte (2004), Berglund and Wennberg (2006), and Nasiru et al., (2015) pull in a

testimonial that the inclusion of mediating variable is required between the independent and the dependent variables.

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Equally, creativity is found to lead to start-up in urban regions as well as the social network matters, particularly in rural areas (Freire-Gibb & Nielsen, 2011). Likewise, structural equation modelling was applied to dissect data and reported that creativity, productivity and entrepreneurial intent mediated the relationship. Furthermore, the study found that proactivity was related to creativity as well as perceived entrepreneurial desirability and direct attention to creativity as an essential competence in the entrepreneurial process (Zampetakis, 2008). Additionally, creativity was found to be positively influenced by the viability of a business venture idea, strategies on opportunity search, and accomplishment of knowledge (Heinonen, Haiti, & Stenholm, 2011). Likewise, other studies reported a positive association on the relationship between EE, EI, and perceived creativity disposition of students (Yeng Keat & Abdullah, 2015).

Nevertheless, Prabhu, Sutton, and Saucer (2008) found a mediating role of potential level between intrinsic motivations between creativity openness to experience as self-efficacy whereby the relationship was utterly mediating this relationship. Moreover, the study reported that creativity mediated the relationship between the Key Stage 2 test (KS2) and General Certificate of Secondary Education Exams (GCSE). Likewise, the survey evaluated the five creativity subtests of the Aurora Battery, to future performance on academic activities, independent of past

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performance of academic. The data used were 1165 samples of 7th students' grade (UK Year 8, 48.3 percent are female).

Equally, intrinsic motivation and individual creativity mediate the relationship of specific antecedents and one's ability to take risks as well willingness to mediate the effects of intrinsic motivation on the employee. Additionally, the social cognitive theory was applied to examine the impact of leader creative self-efficacy (CSE) on follower creativity. The study used 544 employees under the auspices of 106 supervisors at an ICT company in the U.S.A; there were backing for the ancillary outcome of leader CSE on follower creativity through leader reinforcement of creativity and follower creative process commitment.

Also, Kaufman, Plucker, and Russell (2012) reported that creativity measurement compels the inclusion of creativity as part of a gifted assessment battery. Nevertheless, Social cognitive theory framework was used to explain that the role of an individual's entrepreneurial passion and creativity as antecedents of EIs is mediated by ESE. It indicated that entrepreneurial passion has a healthy positive relationship on EI. Equally, the relationship between creativity and EIs is mediated by ESE, thereby confirming the common belief that individuals need to feel self-efficacious for ECO (Biraglia & Kadile, 2017).

Equally, creativity was found to be positively influenced by entrepreneurial experiences and EIs in Sweden. A sample of 40 students enrolled in a graduate entrepreneurship education programme and a control group of 38 students enrolled in

other graduate programmmes. The study also used linear and ordinal regression analyses (Hamidi, Wennberg, & Berglund, 2006). In another study that was conducted, creativity positively influenced master students of entrepreneurship master programme at a business and an engineering school (Berglund & Wennberg, 2006). The study found that engineering students tend to emphasise incremental development and to solve existing problems while business students focus on entirely new and market-oriented in their creative styles.

Furthermore, a study which used the Theory of Planned Behaviour (TPB) found an association between creativity-enhancing training programme and learning intentions of nascent entrepreneurs where participants that perceived themselves as having a high degree of creativity were found to have higher tendencies to learn (Lourenço & Jayawarna, 2011). Also, creative individuals also rate other training outcomes as positive and perceived usefulness serve as a reliable mediator on the relationship between learning from creativity training and emerging entrepreneurs' intention to make use of their learning (Lourenço & Jayawarna, 2011). In a nutshell, findings agree with TPB as applicable to entrepreneurship and trainees' perception of creativity as a driver for increasing learning habits between emerging entrepreneurs (Lourenço & Jayawarna, 2011).

Equally, creativity enhancing training is found to contribute significant improvements in HEIs students' ability to think creatively (De Tienne & Chandler, 2004). Thereby, teachers can use the classroom to establish supportive creativity learning from research insights (Beghetto & Kaufman, 2014). Teachers should also

encourage students to share creative ideas and be given feedback when they do so, and even model creativity in daily teaching and learning. Similarly, creativity was found with a positive impact on post-training outcomes and business opportunities (De Tienne & Chandler, 2004). Moreover, perceived school support by students for creativity had significant positive effects on both their creative self-efficacy (CSE) and individual creativity. Equally, perceived school support for creativity is affected by individual creativity through mediating role of CSE; the mediation impacts for students with award-winning experiences were higher than on those students without such skills. In the same way, perceived school support for creativity had the effects of moderated mediation between their CSE and individual creativity for students with award-winning experience (Wang, Chang, & Lee, 2016).

Furthermore, a mediation effect of creative self-concept was established on the relationship between artistic behaviours and openness to experience among students. The result indicated that the mediator has positively affected the variables (Chen, 2016). Also, creative self-concept and creative behaviours were studied by the use of structural equation modelling (SEM) as a technique of data analysis (Chen, 2016). The study was indirectly related to creative behaviours through creative self-concept. Notwithstanding, the findings of Yeng-Keat and Nasiru (2015) show that perceived creativity disposition facilitates an understanding of EE and EI relationship.

Likewise, SEM was used to explore the mediating impact of creativity on students' performance on different academic tests (Mourgues, Tan, Hein, Elliott & Grigorenko, 2016). Furthermore, employee creativity was found as a significant

predictor as well as a mediator between willingness to take risks, encouragement, and creativity (Dewett 2006). Again, the study of Wang and Zhu (2011) examined the relationships among transformational leadership, creative identity, and creativity from a multilevel perspective. The study reported that individual creativity was found to mediate the relationship between the study variables.

In the Nigerian context, a study explores and recommends ways through which skill acquisition, creativity, and technological tools can better contribute to educational goals. The study examines the impact technology can encourage enhancement in reach and delivery of content, teaching and learning outcomes, and pertinence (Ajake, Oba, & Ekpoh, 2014). Similarly, the study opines that restructuring and incorporation of EE in higher education curriculum through delivery method, skill acquisition integration, and ICT integration is a vital tool and an engine that could drive the social and economic development of a country through their activities for job creation and growth inducement (Ajake et al., 2014). Indeed, their recommendation is a contribution to global reflection on how to make learning throughout life a reality through the enriching of HEIs curriculum to meet these challenges.

Another study found that neglect of TVET led to crimes and social vices among Nigerian graduate youth. The study also found that traditional ideas and primitive techniques that proved useful in the past were rejected in preference for foreign ideas and goods without concern of improving local capabilities (Okoye & Eze, 2010). In an attempt to discover self-employment and good living through creative abilities,

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Okoye (2010) argued that creative individuals usually have good eye coordination, manual dexterity, and other skills which enable them to express their thoughts and innovative ideas. Therefore, they can make use of their creative abilities to search and discover opportunities for exploitation, hence engaging in ECO. Studies have established significant positive relationships between creativity and viability of business ideas during some EE modules. Meanwhile, a direct and positive effect on creativity and EI were observed between gender and creativity. Based on the preceding analysis and findings, the following hypotheses were formulated:

H12: Creativity mediates the relationship between know-what and entrepreneurial career option.

H13: Creativity mediates the relationship between know-how and entrepreneurial career option.

H14: Creativity mediates the relationship between know-who and entrepreneurial career option.

H15: Creativity mediates the relationship between know-why and entrepreneurial career option.

H16: Creativity mediates the relationship between know-when and entrepreneurial career option.

2.7 Framework

Based on the research gaps explained in the problem statements, the study develops a framework to investigate the mediating role of creativity in the relationship between entrepreneurship education (know-what, know-how, know-who, know-why, and know-when), and students entrepreneurial career option (ECO) in Northwestern

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Nigeria. The study comprises of five independent variables; know-what, know-how, know-who, know-why, know-when (as components of EE), and entrepreneurial career option (ECO) as the dependent variable, while creativity is the mediating variable. Figure 2.2 reveals the framework of the study.

Independent variables   Mediator variable   Dependent variable
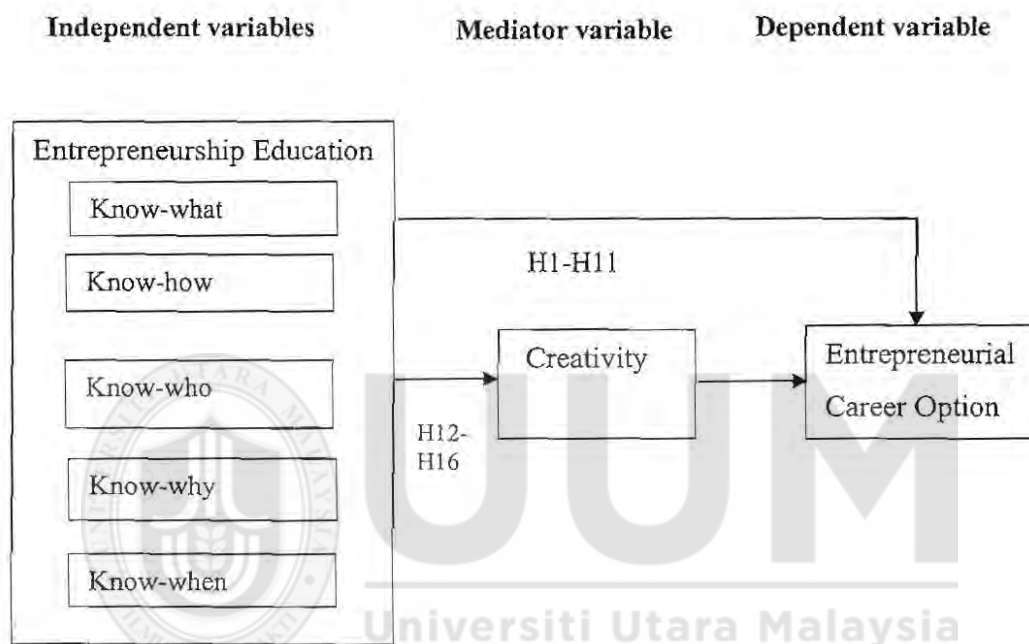
Figure 2.2
Relationship between components of entrepreneurship education, creativity and entrepreneurial career option.

2.8 Underpinning Theories

A plethora of frameworks and theories covering behavioural, psychological, career related fields exist in the analysis of entrepreneurial career choice. For example, Shapero and Sokol's (1982) Entrepreneurial Events, Ajzen's (1991) Theory of Planned Behaviour, Bandura's (1997) Social Learning Theory, and later Social Cognitive Theory (SCT), Lent's et al (1993) Social Cognitive Career Theory, Schein's (1993) Career Anchors. Similarly, the Human Capital Theory (HCT) shows

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the justification of government investment in education, skills, and experience for achieving economic development and social well-being of its citizens. For this study, the HCT was used to explain the rationale for government investment in EE. The Dyer's (1994) entrepreneurial careers was the model used to justify and explain students' choice of ECO as an option of career.

2.8.1 Human Capital Theory (HCT)

The issue of human capital (HC) is designed and can be described as the knowledge and skills an individual obtains through asset in education, on-the-job exercise and another style of experiences (Akhuemonkhan et al., 2013; Olaniyan & Okemakinde, 2008). HC is the stock of knowledge and characteristic a worker has, either innate or acquired, that contributes to his/her productivity. HC represents investment people make in them that supplements their economic fortunes.

Schultz (1993) described HC as a critical constituent in improving employees and firm's assets to boost productivity as well as to sustain a kind of competitive advantage. The Human Capital Development (HCD) is seen as processes which inculcate education, training as well as other professional skills which can increase the levels of skills, knowledge, value, abilities and social assets of the employees. These will result in the employees' performance and satisfaction as well as ultimately in a firm's activities and performance. Human capital theory (HCT) is a framework for the justification of education, training and skills as a means of achieving productivity, work efficiency and socio-economic development (Akhuemonkhan et al., 2013).

An underlying assumption of HCT is that new generation must be in agreement with proper part of knowledge which has previously been gathered by the earlier generation. Secondly, that the present generation must be trained on how existing knowledge ought to be utilised to create new goods, to initiate new processes and production methods as well as social services. Thirdly, that individual should be confident to develop entirely new skills, ideas, products, and procedures, as well as using creative approaches (Ogunyomi & Bruning, 2015; Maresch, Harms, Kailer, & Wimmer-Wurm, 2016).

Furthermore, previous studies have explained entrepreneurship through the lenses of HCT (e.g., Akhuemonkhan et al., 2013; Bae et al., 2014; Ogunyomi & Bruning, 2015; Maresch, Harms, Kailer, & Wimmer-Wurm, 2016; Martin, McNally, & Kay, 2013). In effect, the HCT provides the underlying rationale for public expenditure on education both in developed and developing nations (Fagerlind & Saha, 1997; Onyinyechi & Joseph, 2011). Efforts to promote spending in HC were seen to have effect on rapid economic growth for society. It was agreed that expenditures on education, training, and Medicare are investments in capital (e.g., Olaniyan & Okemakinde, 2008). HCT foresees the well-being of a society as a function of its traditional stock of financial capital, labour, natural resources, and knowledge and skills of individuals in that society (e.g., Ogunyomi & Bruning, 2016; Ayeni, 2003).

Therefore, education is the key element of HCT, because it is the fundamental means of increasing knowledge and skills (Van den Berg, 2001). A nation's development is vested in the quality and quantity of educated individuals in the

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country (Babalola, 2003; Bosma, Praag, Thurik & De Witt, 2004). Hence, EE is an investment by the government on its human resources to increase their skills and knowledge to achieve economic prosperity for individuals, societies, and nations in general. EE is a predictor of entrepreneurship. Therefore, EE would influence students' decision to choose entrepreneurship as a career path option (e.g., Odekunle, 2001; Ogunyomi & Brining, 2015).

Equally, formal education is significant and compulsory to improve the productive capacity of a nation which explains the rationality of human capital (Bosma et al., 2004). Knowledge as a capital good is often used to develop human resources necessary for economic and social transformation (Olaniyan & Okemakinde, 2008). The concept of education as a capital good relates to the idea of HC which emphasises that the development of skills is a significant element in production undertakings (Babalola, 2003; Bosma et al., 2004). Increased faith in education as a vital agent of change led to massive investments in education in developing countries of the world, and developed countries are said to have achieved their current status through investments in education, notably EE (e.g., Olaniyan & Okemakinde, 2008).

2.8.2 Dyer's (1994) Model of Entrepreneurial Career

Meanwhile, Dyer (1994) analysed and synthesised all the entrepreneurial theories and advanced a model of entrepreneurial careers. Previous entrepreneurship studies have used this model to explain entrepreneurial activities (Bignotti, 2013; Muofhe & du Toit, 2011; Sharma & Madan, 2014; Zampetakis, Gotsi, Andriopoulos, & Moustakis, 2011). The model argues that EE can offer opportunities to stimulate the

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start of a business venture and to observe role models. Accordingly, the model argues that entrepreneurship is affected by four general factors;

a) Career socialisation consists of experiences that may spark up entrepreneurial career. These may include early childhood experiences, work experience, education, and prior start-up experience.

b) Career orientation relates to the role and identity development of the entrepreneur.

c) Career progression deals with the kind of roles entrepreneurs assume over time and is related to the challenges that entrepreneurs might experience as their venture grows.

d) Antecedents of career choice consist of individual, social, and economic factors:

    i. Personal factors include the need for achievement, the need for control, tolerance of ambiguity, and entrepreneurial attitudes, and creativity dispositions.

    ii. Social factors consist of family relationships, family support, community support, and role models.

    iii. Economic factor comprises of lack of alternative career in existing organisation, economic growth, business growth and availability of networks.

According to this model, education is one of the significant and fundamental things that prepare a person for an entrepreneurial career (Keat et al., 2011; Kuratko, 2003; Peterman & Kennedy, 2003; Wu & Wu, 2008). Entrepreneurship students learn how

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to convey business ideas better and quicker to market compared to non-entrepreneurial students. Therefore, they should obtain much higher value from the similar opportunity as others get. Knowledge of EE courses should give students the self-confidence to contemplate starting their business ventures (Dyer, 1994). The model further argues that role models are factors that influence individuals' intentions to choose entrepreneurship as a career option (ECO).

2.9 Summary of the Chapter

This chapter discusses the overview of the concept of ECO. The study includes an overview of entrepreneurship, EIs, entrepreneurial career choice, and ECO. The chapter also explains the antecedents of career choice and the career process in line with the previous studies. It further examines the venture creation models, the role of psychological factors in NVC, and the role of cognition in the decision to exploit NVC. The chapter also discusses the components of EE regarding know-what, know-who, know-how, know-why, and know-when competencies. Extant literature was reviewed about EE courses as obtainable in Nigeria's HEIs. Similarly, some researches on the role of creativity in EE were reviewed. The HCT and Dyer's (1994) model of entrepreneurial careers were the underpinning theories which were also covered in the explanation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the plan on which the study was carried out and the methods and techniques adopted in the process of data collection, analysis, and presentation. The chapter described the methods adopted in achieving the objectives of the research study. In addition, the chapter also explained the research design which includes: the population of the study, sampling technique and sampling size, operational definition of study variables and measurement of the variables. Data collection procedures, instruments of data collection, techniques of data analysis were also explained and a pilot test was conducted and reported. The location of the study, time of study as well as the unit of analysis were also discussed and explained.

3.2 Research Design

The essence of research design is to provide a general plan of how the researcher conducts the study to answer the questions raised in the research study (Sekaran & Bougie, 2013). The research design is considered as the process of collecting and analysing data to obtain a solution to a research problem (Sekaran & Bougie, 2013). Research design can also be regarded as a scheme that serves as a useful guide to the researcher in his/her effort to generate data for the study (Asika, 2008). It is often considered as the best method in determining the purpose associated with objectives f the study. The research design determines what to research upon, where to conduct

the research, when to conduct it, the cost involved, and what means pertaining an investigation (Garg & Kothari, 2014).

More so, research design is classified into three; historical research which explores the employment of secondary information and observation respectively, survey or non-experimental design comprising of interviews and questionnaires, and experimental design which is carried out in a research laboratory (Sekaran, 2003; Zikmund, 2000). The choice of method to be used in a study is dependent upon the clarity of the research problem and understanding of the individual researcher. For the purpose of this study, the non-experimental research design was used anywhere the investigator did not have to switch over the research independent variable that determines their effects on the dependent variables. The researcher does not interfere with the research settings but can influence the measurement for the study.

Thus, this study adopted the survey method, because the study aimed at describing the characteristics of a population as evidenced by the research questions, objectives, and hypotheses. Survey is viewed as the collection of information, from and about people to describe, compare, and explain their knowledge, attitude, and behaviour (Sekaran & Bougie, 2013). Therefore, the survey method is found to be more appropriate for this study as it involves collecting data from polytechnic students located in the northwest geopolitical zone of Nigeria. The study seeks to determine the mediating effect of creativity on the relationship between entrepreneurship education (EE) and entrepreneurial career option (ECO) of students in Northwestern Nigeria.

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3.3 Unit of Analysis

The unit of analysis in a research study describes the object being studied. In social science research, individual, organisation, and group as units of analysis were identified (Creswell, 2012). For the purpose of this study, however, the unit of analysis is the individual students. These comprised of level two Higher National Diploma (HND) students of polytechnics located in the North-West geopolitical zone, comprising of seven states of Nigeria.

3.4 Population of the Study

The population of a study is described as a group of individuals or set of organisations with some common identity to study (Creswell, 2005). The population is also viewed as a collection of subjects of interest to a study (Cavana, Delahaye & Sekaran, 2001). Also, Creswell (2012) sees a population in terms of a group of individuals having the same characteristics and other common attributes that a researcher can identify and study. The target population of this study comprised of 6043 final year students (HND II) of polytechnics in north-western geopolitical zone of Nigeria (NBTE, 2017). These polytechnics are located in the seven state of Nigeria and they include: Jigawa, Kano, Kaduna, Katsina, Kebbi, Sokoto and Zamfara states. This research uses a quantitative methodology because of it's is importance in the analysis and proof of theories relating to the study variables as raised by research questions, as well as discovering variables for future research. The ability to use standardized tests to measure the validity and reliability was said to be an important attribute of the quantitative method (Creswell, 2014).

3.5 Sample Size and Sampling Techniques

This section explains the sampling techniques used by the researcher in order to determine the sample size on which the research study was carried out.

3.5.1 Sample Size

A sample is a subgroup of a target population that the researcher sets out to study for the purpose of making generalizations about such a target population (Creswell, 2012). Sampling reflects the processes used to select cases from an entire population (Saunders, 2011). It is often impossible to collect information and data from each and every member of a population, therefore, studies use sub-set of the population to gain the advantage of recording a few error in data collection, reduced fatigue; thereby producing better and reliable results (Sekaran & Bougie, 2010).

In this study, the minimum desired sample size was determined by G*Power value (figure 3.1). G*Power analysis was used to determine the minimum sample size for a study (Bruin, 2006). It does not have to consider the size of the population in determining G*power sample size (Faul, Erdfelder, Lang, & Buchner, 2007). A priori power analysis based on G*power 3.1.9 software was used to calculate the sample size. Using five predictors, the G* power a priori measure assumes that a minimum sample size of 146 was considered sufficient to test the regression (Faul et al., 2009; Faul et al., 2007).

To account for the poor response rate to questionnaires in Nigeria (Nakpodia, Ayo, & Adomi, 2007), the sample size of 146 is insufficient for the study. The study

therefore, explored the option of using Kreijcie and Mogan (1970) as a suitable criteria for determining an appropriate sample size. Since the G*power value is a minimum requirement, the appropriate sample size was more than the minimum value produced by G*power analysis (Faul et al., 2009; Faul et al., 2007). Figure 3.1 below shows the recommended G*power sample size for the study.
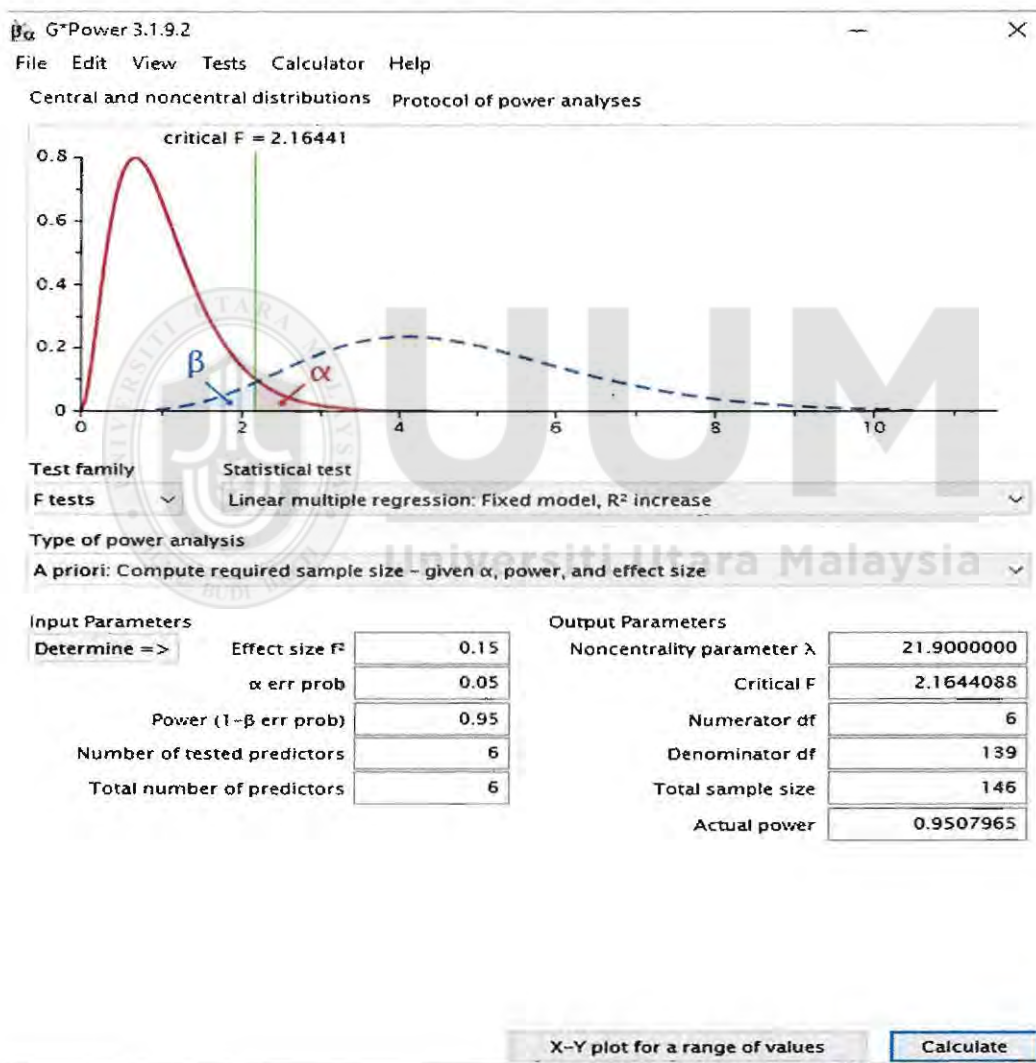
Figure 3.1
G*Power 3.1.9
Source: Faul, Erdfelder, Lang, & Buchner (2009).

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The survey covered a total population of 6043 HND students of polytechnics located in the North-West geopolitical zone of Nigeria in the 2014/2015 academic session (NBTE, 2017). Based on the table (Krejcie & Morgan, 1970) sample determination, a sample size of 361 students was selected to represent the population of the study.

Similarly, the Dillman's (2007) formula for the sample size determination also confirmed the sample size as 361 students. Based on the formula of Dillman for sample size determination, the sample size for the population was calculated as follows:-

$$Ns = \frac{(Np)(p)(1-p)}{(N-1)\left(\frac{B}{C}\right)^2 + (P)(1-P)}$$

Where:

Ns = the actual sample size.

Np = size of the population which is 6,043.

P = the population proportion expected to choose among the two response categories is 0.5.

B = sample error at 0.05 (5%).

C = confidence level at 0.05 is 1.96.

Hence, the sample for this study is calculated as follows:

$$Ns = \frac{(6043)(0.5)(1-0.5p)}{(6043-1)\left(\frac{0.05}{1.96}\right)^2 + (0.5)(1-0.5)}$$

$$Ns = \frac{1510.75}{6042*1.96 + 0.25}$$

$$Ns = \frac{1510.75}{6042*0.000651 + 0.25}$$

$$Ns = \frac{1510.75}{4.183342}$$

$$Ns= 361.13466684$$
$$Ns=361$$

However, in line with the argument that the smaller the sample size, the greater the possibility of error and the higher the sample, the better result will be obtained (Alreck & Settle, 1995), an increase of 40 percent (40/100 x 361 =144.4) was made to the sample size (144.4 +361 = 505.4) to arrive at a total number of 505.4 (Hair et al., 2010; Hair, Wolfinbarger, & Ortinau, 2008), which was rounded up to 505. Therefore, 505 copies of the instrument (questionnaires) were distributed proportionately among the sampled polytechnics in Northwest zone of Nigeria. This is because, the larger the sample size, the stronger the power of statistical test (Kelley & Maxwell, 2003; Snijders, 2005). A total number of 505 questionnaires were distributed to accommodate non-responses and sample size errors (Salkind, 1997).

3.5.2 Sampling Techniques

Sampling techniques discussed the techniques used by the researcher to determine the size of the sample on which the study was carried out. The sample may not have an exact composition of a population but appropriate sampling technique will reduce sampling error (Gay & Diehl, 1996). Sampling techniques are broadly classified into probability and non-probability techniques (Sekaran, 2003). Probability sampling is more appropriate for this study because it provides an estimate of precision in addition to giving the opportunity to generalize findings to the entire population under study (Ching, 2016). Moreover, probability sampling is the technique that is

more appropriate for explanatory studies (Cooper & Schindler, 2014). It is simple, least bias, and offers most generalizability (Sekaran, 2003).

In this study, the chosen sampling technique was multi-stage stratified random sampling. The chosen sampling technique is justified because the list of all the members of the population is available as required for the use of simple random sampling. This allows for easy access to any member that might have been included (Ching, 2016). Also, a randomly generated sample represents more attributes of the target population (Salkind, 2012).

The population of this study consists of 6,043 final year HND students of polytechnics in Northwestern Nigeria. Since the populations are spread in eleven polytechnics, a multi-stage stratified random sampling was used to select six polytechnics. Consequently, a proportionate random sampling was used to generate 505 students from the six institutions picked for the study. These HND students have been taught EE and have undergone the mandatory skills acquisition programmes prior to graduation from National Diploma programmes. Equally, the students have been taught EE during their first year of Higher National Diploma based on the unified EE curriculum of polytechnics in Nigeria (NBTE, 2008). The entrepreneurial knowledge and skills acquired at the previous level of their learning programme might have equipped them with the capacity to choose ECO.

Since the size of the study population is relatively large and widely dispersed, multi-stage cluster sampling was used as it is considered as capable of providing a fair

representation of the population as a representative of the study population. This goes in harmony with the argument that multi-stage sampling could be used to generate small sample that could be used to represent a larger population (Balian, 1982). The multi-stage sampling technique includes among its constituents, systematic, cluster, and stratified sampling techniques (Acharya, Prakash, Saxena, & Nigam, 2013).

Consequently, multi-stage, stratified random sampling technique was used to select a total of 6 polytechnics located in Northwestern Nigeria (NBTE, 2017). Based on cluster chosen, the study took a proportionate probability sample of the population based on institution (polytechnic) selected. A total number of 6,043 second year HND students of the listed polytechnics during the 2014/2015 academic session comprise the population of the study (see appendix C). Table 3.1 shows the list of institutions selected, their estimated population, and proportionate sample size.
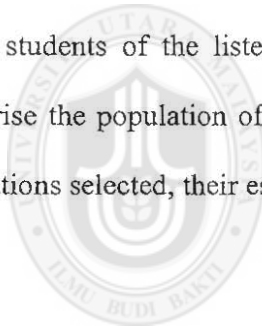
Table 3.1
Population Frame

No.	Institution	Population	Percentage Proportion	Proportionate sample size
1.	Abdu Gusau Polytechnic, Talata Mafara, Zamfara State	320	5.3	27
2.	Hassan Usman Katsina Polytechnic, Katsina State	458	7.6	38
3.	Hussaini Adamu Fed Polytechnic, Kazaure.	9	0.15	01
4.	Kaduna Polytechnic, Kaduna State	2964	49.05	248
5.	Kano State Polytechnic, Kano.	1229	20.34	103
6.	Waziri Umaru Polytechnic, Birnin Kebbi, Kebbi State.	1063	17.59	89
	Total	**6043**	**100**	**505**

3.6 Data Collection

In this study, the data collection exercise was conducted in the month of August 2017 when the 2014/2015 HND students were bracing up to write their final semester examinations. This was to allow for probable variation in the commencement of the sessions among the study institutions. Data was collected through self-administered questionnaire. The nature of the students makes it possible to distribute the questionnaires, read out the instructions, and collect the responses immediately. This

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ensures that the respondents actually understood the requirements of the instrument and such reduces non-response rate.

Self-administered questionnaires helped the researcher to clarify any ambiguity from the side of the students as the researcher introduces the survey. It also allows for clarifications to be made immediately, collection to be made almost immediately, and increased the rate of response achieved (Sekaran & Bougie, 2010). In line with the need to prove the authenticity of the data collection exercise, an introductory letter was collected from the Othman Yeop Abdullah Graduate School of Business (OYAGSB) explaining the research and its purpose. The letter is a proof that the exercise is genuine and that the main purpose is academic activities. The introductory letter was used to obtain approval from the office of the respective registrars to allow HND students of their institutions to respond to the designed questionnaire and also to obtain vital information from NBTE.

Similarly, letter was also tendered to solicit the cooperation of all the stakeholders (HEIs, FME, NBS etc.) to facilitate the supply and acquisition of some relevant and vital information for the study. The respective registrars are expected to collaborate with academic heads of departments for permission to use their students to respond to the study questionnaire. The questionnaire is an eight-page document including the cover letter, the research questions, and clear instructions that aid the process of answering the survey questions. The cover letter contained highlights of the background and purpose of the research study as well as provides specific

instructions on how to fill-in the questionnaire. Also, assurance of the confidentiality and secrecy of all information supplied was confirmed in the introductory letter.

3.6.1 Data Collection Instrument

The study largely relied on primary data collected from students of the aforementioned polytechnics located in the Northwestern part of Nigeria. The questionnaire is the main and only instrument used in the data collection exercise.

3.6.2 Questionnaires

This study used questionnaire as the instrument of data collection. Essentially, questionnaires are described as a predetermined set of questions used to solicit information from respondents often within stated alternative responses (Sekaran, 2003; Sekaran & Bougie, 2013). Items of questionnaire instrument can be open-ended or closed-ended. Open-ended questionnaires give the respondents an opportunity to answer questions as they choose, while closed-ended questionnaires restrict the respondents to choose between some listed alternatives (Sekaran & Bougie, 2013). The close-ended questionnaire was found to be more suitable for the study because of its advantage over the open-ended questionnaire. The closed-ended questionnaire has an ability to generate statistics appropriate for coding, tabulation, and analysis with relative ease.

The questionnaire can be self-administered, electronically administered or through mail. In this study, questionnaires were self-administered to the respondents, who were final year Higher National Diploma (HND II) programmes and participated in

entrepreneurial courses during their National Diploma (ND) programme. It included all students from the sampled institution who have been selected through multi-stage stratified sampling technique (Archarya et al., 2013).

Consequently, the relevant data relating to enrolment was obtained from the NBTE, the agency responsible for the supervision of polytechnics in Nigeria. Also, the academic offices of the sampled higher education institutions (HEIs) were instrumental in giving permission to administer the instrument to the students. The general information on entrepreneurship, entrepreneurial career option, EE, and creativity were obtained through the UUM library e-resources, and the Google search engine. Again, some vital information was obtained from the databases of NBTE, FME, GEM, ILO, the World Bank Group (WBG), and NBS, etc.

3.6.3 Questionnaire Design

The questionnaire design essentially focuses on the wording of the questions, categorizing, scaling, coding, as well as the total appearance of the questionnaire (Sekaran, 2003). A good questionnaire design in research ensures that bias is minimized as much as possible.

This study used a seven-point Likert scale ranging from strongly disagree to strongly agree in order to measure the responses to the questions, because it is the most frequently used variation of the summated rating scale (Cooper & Schindler, 2003). Also, the seven-point Likert scale can reduce non-response bias problems because the scale has a mid-point (Elmore & Beggs, 1975; Krosnick & Fabrigar, 1997). A

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measurement scale that has no mid-point may force respondents to answer in a particular direction thereby leading to increased response error (Krosnick & Fabrigar 1997). Previous literature showed that the seven-point likert scale is acceptable for validity and reliability levels (Petrides & Furnham 2000; Karimi, Leggat, Donohue, Farrell & Couper, 2014). The Likert scale helps the researcher in calculating and summing up scores for each response and performs arithmetical operations in the period of data analysis (Sekaran & Bougie, 2010). The study adapted instruments which showed good Cronbach alpha value because such instruments are found to be strong and reliable (see appendix A).

3.6.4 Adaptation and Measurement of Scale

Constructs are abstractions that do not convey any meaning in research until they are operationally defined (Sekaran, 2003). In this study, the independent variables are the EE components which include know-what, know-how, know-who, know-why, and know-when. The dependent variable is entrepreneurial career option. The independent variable is mediated by creativity. Therefore, this section of the study comprised of the definition of the constructs and selection of items for each construct and ensuring the validity and reliability of each construct.

The quality of questions asked in a research study determines the information obtained, as such questionnaire development is critically important (Zikmund, Babin, Carr, & Grrifin, 2010). The contents that assess a measure may undergo revision by changing or by adding proportionately some hitherto unintended items or by dropping others (Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). In

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such a case, reasons should be given for the alteration on the existing measure to ensure that changes made do not interfere with the measure's psychometric balance and clarity (Schriesheim et al., 1993).

In this study, item measures were mostly adapted from the previously assessed instruments. The variables of the study include entrepreneurial career option, components of EE (know-what, know-how, know-who, know-why, and know-when), and creativity (CRT) adapted from previous studies. To note, however, that all the items were subjected to a process of content revalidation by obtaining the opinions of experts. Based on their suggestions, some items were dropped, split, added or wordings modified. Consequently, items measuring ECO were comparatively most affected by the revision, while items measuring components of EE were mostly adapted with slight modifications. It is noteworthy that ECO is a recent conceptualization as discussed in the previous chapter (Literature review). In this study, ECO construct was made up of entrepreneurial attitude, motivation, risk perception, and self-efficacy. There were available measures for all the super-ordinate scales.

Therefore, 28 items were used to measure ECO based on its dimensions such as entrepreneurial attitude, entrepreneurial motivation, entrepreneurial risk perception, and entrepreneurial self-efficacy. Also, 8 items were adapted from the work of Moy, Luk and Wright (2003) and Theng and Boon (1996) to measure the individual motivation towards becoming an entrepreneur. Items 1, 3, 6, 8, 9, 24, 25, and 26 were selected in this respect. Also, measures from previous work of Drnovsek &

Glas (2002), Le Roux (2005), and Steenekamp and Van der Merwe (2011) were used to measure super-ordinate scale of entrepreneurial self-efficacy, risk-orientation, and entrepreneurial attitudes respectively. Similarly, the measures for the components of EE including; know-what, know-how, know-who, know-why, and know-when competencies were adapted from the previous work of scholars. Know-what competency scale was adapted from the work of Lo (2011), and all the five items were adapted with modifications on question wording. Also, know-how competency scale was adapted from similar work of Lo (2011). Again, all the six items used by Lo (2011) to measure know-who competency were adapted with modified wordings. Similarly, all the five items used to measure know-why competency were adapted from Lo (2011), while know-when competency was adapted from the work of Carlson (2008). Similarly, the creativity (CRT) measures were to some extent modified by dropping, splitting and altering the item wordings. Items measuring creativity were adapted from previous studies of Olatoye et al. (2010). The Nicholas Holt Creativity Test (NHCT) was originally developed by Nicholas Holt to measure creativity among students. The measure was re-tested by Olatoye et al. (2010) and a reliability coefficient of 0.88 was obtained.

Although reverse items in a scale has the advantage of detecting reckless respondents thereby improving the accuracy of data, and that using reverse items in multi-item scale, respondents are likely to lose motivation as they read very similar items and may decide to pep through the items checking off a certain level of response scale. Reverse items were also suggested to minimize the problems of acquiescence and inattention. Despite the advantages of reverse scale, in this study, positively worded

items were used because reverse items were known to produce unexpected factor structure (Netemeyer, Bearden, & Sharma, 2003). Another problem of reverse item scale is that it is easy for the respondents to misinterpret phrases that include negation which is a result of miscomprehension (Swain, Weathers, & Neidrich, 2008). This problem is especially compounded when scales are translated from other languages (Wong, Rindfleisch, & Burroughs, 2003). The use of a mix of both positively and negatively-worded items will intensify the cognitive burden on respondents (Barnette, 2000). This concern is particularly essential given the lower differential ability amongst respondents with lower level of education (Melnick & Gable, 1990).

Importantly, the study adapted measurements based on previous studies to the current research context (Churchill, 1979). All the study constructs were measured by the use of multi-item scales using seven-point Likert scale. This allowed for less systematic error and the research to sample out of a wide range of content for conceptual definition (Ching, 2016; Neuman & Krueger, 2003). The nature of the respondents (Malhotra, 2007) and ability to discriminate meaningfully (DeVellis, 2003) guided the choice of the scale point. Therefore, the seven point scale is reasonable for the population who are students in higher national diploma programmes that have the higher intellectual capacity to distinguish meaningfully between the scale categories.

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3.6.5 Procedure Used in Item Adaptation

The researcher was guided by the work of previous scholars in the questionnaire item generation process (e.g., Hinkin, 1995; Mackenzie, Podsakoff, & Podsakoff, 2011; Johnson et al., 2012). Figure 3.2 outlines a step by step process item generation procedure. In step 1 and step 2 stages were conducted to pool items. In the first step (step 1), the phenomena of attention was conceptually arranged in order to grasp a well-formulated definition, and then the description of how a construct relates to the issue was made (DeVelles, 2003). In practice, step 1 provided a clear borderline for the main construct domain, based on which measurements were extracted (Robinson, Shaver, & Wrightsman, 1991).

Herein, theoretical and empirical considerations were reviewed as to validate how the measurements came about. Then, empirically-testable enclosure criteria for selecting items were stated for each measurement extracted (Johnson et al., 2012) particularly, the inclusion criteria for ECO literature review chapter. Later, step 2, the enclosure criteria were used to pool items into each individual dimension. The initiating and refining process encompassing step 1 and step 2 were consistent with Hinkin's (1995) deductive approach versus inductive approach. The method is used given its reasonable flow which simplifies understandings. Figure 3.1 shows a step by step process of item adaptation employed in the study.

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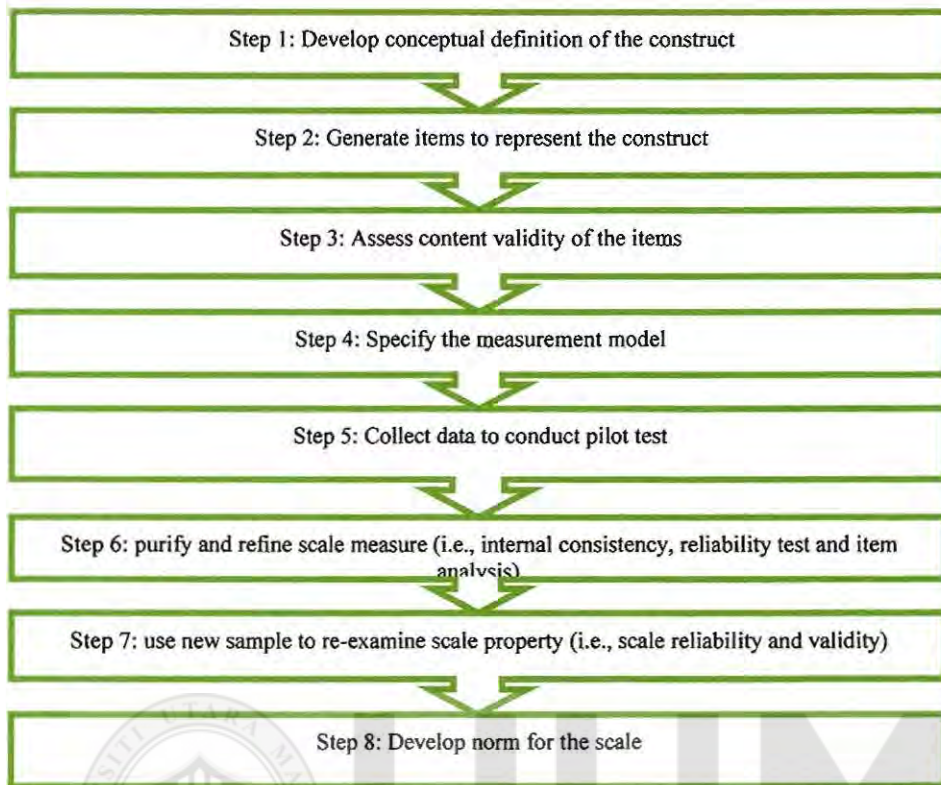
Figure3.2
Scale Development Procedure
Source: Ching (2016).

While steps 1 and 2 were assumed in literature review in chapter 2, the content validity in step 3 was performed under validity matters. Content validity is a key in item generation of a new measure (Hinkin, 1995). Then, the specification of the measurement models in step 4, and step 5 consisted of the pilot testing under preliminary reliability test. Likewise, steps 6 and 7 were addressed by exploratory factor analysis and measurement model confirmatory factor analysis respectively. Since the study did not develop new items, certain stages may not apply to the current research. The study only employed procedures that are applicable and suitable to item measure adaptation.

3.6.6 Measurement of Entrepreneurial Career Option

Entrepreneurial career option (ECO) is a "conscious and planned" decision to engage in entrepreneurship as a career path (Krueger et al., 2000). ECO is a prompt and decisive action to engage entrepreneurship as a career path (Bignotti, 2013; Perez-Lopez et al., 2016). Entrepreneurship is the career option for unemployed youths and graduates (Beeka & Rimmington, 2011 & Fatoki, 2014). In this study, ECO is a decision to exploit entrepreneurial opportunity through the creation of a new business venture (NVC).

In this study, ECO consisted of four attributes as entrepreneurial attitudes, risk perception, motivation, and entrepreneurial self-efficacy. Each variable was measured by a 1-7 point scale with respect to an individual's disagreement or agreement with a list of issues stated against each of the variables mentioned above. A self-administered questionnaire was applied to final year HND polytechnic students who have undertaken entrepreneurial courses in Northwestern Nigeria to determine their decision of choosing entrepreneurship as a career option. ECO was measured by a total of 28 items adapted from previous studies. Students were asked to indicate their intensity of feelings on a continuum scale of 1-7 items as followed: Imagine yourself as an entrepreneur; please rate the following items according to their perceived agreement in your decision to create your own business venture. The anchors on the scale consisted of *strongly disagree (1), disagree (2), moderately disagree (3), neutral (4), moderately agree (5), Agree (6), and strongly agree (7).* Table 3.2 shows the original and adapted items used to measure ECO.

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Table 3.2
Measurement of ECO: the original and revised wordings

Variable	Items	Original wording		New wording	References
Entrepreneurial Attides	1	I trust my own instincts when solving problems in class	ECO 1	I trust my own instincts when solving entrepreneurial problems	Steenekamp & Van der Merwe (2011)
	2	I will keep trying out different solutions to problems rather than give up	ECO 2	I believe in trial and error to solve problems rather than give up	
	3	I have a lot of faith in my own stability to succeed in my future career	ECO 3	I have faith in the success of my future career	
	4	I have lessons that strengthen my imagination	ECO 4	I have experiences that strengthen my imaginations	
	5	My instincts help me work out problems we are set	ECO 5	My instincts help me to work out entrepreneurial problems	
Risk-orientation	1	The probability of doing poorly is very high	ECO 6	The probability of doing good is high	Le Roux (2005)
	2	There is great uncertainty when predicting how well I do with the concept introduction	ECO 7	There is less uncertainty when predicting how well I do with the business introduction	
	3	The overall riskiness of my concept is high	ECO 8	The overall riskiness of the business is low	
	4	Overall I will label the option of introducing the concept as a business as something negative	ECO 9	The overall option of introducing the business is something positive to me	
	5	I would label introducing the concept as a potential loss	ECO 10	Introducing the business is considered as a potential gain to me	
	6	Introducing the concept will have negative ramifications for my future	ECO 11	Introducing the business will have positive effects on my future	
	7	There is a high probability of my losing a great deal by introducing the concept	ECO 12	There is high probability of losing a great deal of money by introducing the business	
Motivation	1	To increase my personal income	ECO 13	I shall be an entrepreneur to increase my personal income	Moy et al. (2003); Theng & Boon (1996)
	3	To acquire personal wealth	ECO 14	I shall be an entrepreneur to acquire personal wealth	

Table 3.2 (Continued)

Variable	Items	Original wording		New wording	References
	6	To obtain self- employment	ECO15	I shall be an entrepreneur to be self-employed	
	8	To control my destiny	ECO16	I shall be an entrepreneur to control my destiny	
	9	To acquire personal security	ECO17	I shall be an entrepreneur to acquire personal security	
	26	To recognise and exploit opportunities	ECO18	I shall be an entrepreneur to recognise and exploit opportunities	
	24	To develop new ideas, innovation, and initiatives*	ECO19	I shall be entrepreneur to develop new ideas	*split item
			ECO20	I shall be an entrepreneur to develop innovative abilities	
			ECO21	I shall be an entrepreneur develop my initiatives	
	8	To respond to change	ECO22	I shall be an entrepreneur to respond to change	
Entrepreneurial self-efficacy	1	I can establish a position in the product market	ECO23	I believe I can establish a position in the product market	Drnovsek & Glas (2002).
	2	I am good at developing new business ideas	ECO24	I believe I am good at developing new business ideas	
	3	I am good at strategic planning	ECO25	I believe I am good at strategic planning	
	4	I am good at making decisions involving uncertainty and risk	ECO26	I believe I am good at making decisions involving uncertainty and risk	
	5	I can develop financial systems and internal controls*	ECO27	I believe I can develop financial systems	*split item
			ECO28	I believe I can develop internal controls	

3.6.7 Measurement of Know-what Competency

Previous studies used know-what competencies to refer to students' theoretical knowledge of entrepreneurship. Know-what knowledge refers to cognitive knowledge that an individual develops about what to do in order to perform entrepreneurship (Asghar et al., 2016; Abuzhuri & Hashim, 2017; Hussein & Hashim, 2015; Johannisson, 1991; Souitaris et al., 2007). Similarly, in this study, know-what knowledge refers to the theoretical knowledge of entrepreneurship. The measures of know-what component is concerned with the knowledge of what is required in order to start a business. Know-what is significant to students as it is the fundamental part of every entrepreneurial course because other knowledge, skills, and techniques are built on theoretical foundations.

Therefore, questionnaire items were adapted from the work of Lo (2011). The items were used in assessing the students' level of disagreement or agreement with a statement about general knowledge of entrepreneurship gained from their studies of EE courses. Students were asked to show their level of agreement or disagreement on a scale of '1' to '7' points scale (strongly disagree to strongly agree), on their learning experience from entrepreneurial education courses they have attended. The original measure was used by Lo (2011) with reliability alpha of 0.852. Table 3.3 shows the original and adapted items used to measure know-what competency.

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Table 3.3
Measures of Know-what: The original and revised item wordings

Variables	Items	Original items	New items	Reference
Know-what	KWT1	The entrepreneurship course increase my understanding of generating innovative ideas	The entrepreneurial courses increases my understanding of generating innovative ideas	Lo (2011)
	KWT2	The entrepreneurship course my understanding of environmental assessment of entrepreneurial ventures	The entrepreneurial courses increases my understanding of environmental assessment of entrepreneurial ventures	
	KWT3	The entrepreneurship course increases my understanding of financial preparation for entrepreneurial ventures	The entrepreneurial courses increases my understanding of financial preparation for entrepreneurial ventures	
	KWT4	The entrepreneurship course increases my understanding of planning a business	The entrepreneurial courses increases my understanding of planning a business	
	KWT5	The entrepreneurship course increases my understanding of market research for entrepreneurial ventures	The entrepreneurial courses increases my understanding of market and feasibility studies for new entrepreneurial ventures	

3.6.8 Measurement of Know-how Competency

Know-how knowledge refers to entrepreneurial knowledge of know-how to do things for the learner. It includes skills, expertise, capabilities, tacit and explicit knowledge of career competencies. Based on the meaning of know-how competencies as defined by Johannisson (1991), several scholars used the construct to refer to knowledge of technical skills (Asghar et al., 2016; Hussein & Hashim, 2015; Isah & Hashim, 2018; Lo, 2011; Zhang et al., 2015). In this study, know-how learning refers to knowledge and skills of performing entrepreneurship. The expectation is that know-how knowledge will enhance students' entrepreneurial skills and managerial skills (e.g., how to identify risks, how to deal with risks, how to identify business opportunities etc.).

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The questionnaire items were adapted from the work of previous scholars (Lo, 2011).

Respondents were asked to tick as appropriate the responses that best describe their

level of agreement or disagreement with entrepreneurship courses they have attended

on a scale of 1-7 points. The measure was used by Lo (2011) with a reliability value

of 0.889. Table 3.4 shows the original and adapted items used to measure know-how.

Table 3.4
Measure of Know-how: the original and revised item wordings

Variable	Item	Original wording	New wording	references
Know-how	KHW1	The entrepreneurship course enhances my skills to develop a business plan	The entrepreneurial courses enhance my skills to develop a good feasibility studies and business plan	Lo (2011).
	KHW2	The courses enhances my skills to handle an entrepreneurship project	The entrepreneurial courses enhance my skill to handle an entrepreneurial project	
	KHW3	The entrepreneurship course enhance my skills to deal with risks and uncertainties	The entrepreneurial courses enhance my skills to deal with risks and uncertainties.	
	KHW4	The entrepreneurial course enhances my skills to allocate resources (e.g., money, personnel, time etc.)	The entrepreneurial courses enhance my skills to allocate resources (e.g., money, personnel, time etc.)	
	KHW5	The entrepreneurship course enhances my ability to identify a business opportunity	The business courses enhance my ability to identify and exploit a business opportunity	

3.6.9 Measurement of Know-who Competency

Know-who knowledge means knowledge of networking skills. Know-who refers to

an understanding of interaction with significant entrepreneurial experts, guest

speakers, and classmates and obtaining useful information and advice from these

people. Different from the other three components, know-who reflects the learning at

the social environment. In the process of interaction with businessmen, the students

may enhance their network development capabilities and obtain up to date

information and advice on current market and technology. In addition, interactions

with entrepreneurs will enable students to get concrete and intellectual support.

Thus, know-who measurement reflects a social learning approach in which stakeholders like teachers, guest speakers, and classmates impact on the mindset of the students as a result of their experiences in entrepreneurship.

Therefore, the study adapted six questionnaire items from previous studies (Lo, 2011). A scale of 1-7 points was used to assess entrepreneurial learning on this construct. Respondents were asked to tick as appropriate, the level of his/her agreement or disagreement with the entrepreneurship education courses they have attended based on the scale. Lo (2011) used the measure with alpha of 0.890. Table 3.5 shows the original and adapted items used to measure know-who competency.

Table 3.5
Measures of Know-who: The original and revised item wordings

Variable	Items	Original Wordings	New Wordings	References
Know-who	KWO1	The entrepreneurship course enhances my ability to develop networks (e.g. obtaining useful advice/information from professors, guest speaker or classmates).	The entrepreneurial courses enhance my ability to develop networks to obtain information from classmates, guest speakers, and professors	Lo (2011)
	KWO2	The creative atmosphere in the entrepreneurship class inspires my entrepreneurial mind	The free atmosphere among students in the entrepreneurial classes inspires my entrepreneurial mind	
	KWO3	Views of professors inspires my entrepreneurial mind	Views of lecturers inspires my entrepreneurial mind	
	KWO4	Views of external speakers inspire my entrepreneurial mind	Views of external speakers inspire my entrepreneurial mind.	
	KWO5	Successful stories of local entrepreneurs inspire my entrepreneurial mind.	Success stories of local entrepreneurs inspire my entrepreneurial mind.	
	KWO6	The entrepreneurial experience of the entrepreneurs enhances my understanding of the entrepreneurial process.	The entrepreneurial experience of the entrepreneurs enhances my understanding of the entrepreneurial networking.	

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3.6.10 Measurement of Know-why Competency

Measures of know-why concerns the understanding of the values and motivations of starting an entrepreneurial activity. This attempts to answer such questions as; why entrepreneurship? Why are entrepreneurial firms initiated by entrepreneurs? What is the significance of entrepreneurship? Why does an entrepreneur start entrepreneurial firm? What are the characteristics of entrepreneurs? etc. This component is about the personal beliefs of learning and initiating entrepreneurship (Fayolle, 2000; Fayolle, 2006; Johannisson, 1991; Souitaris et al., 2007). Know-why allows students to position themselves regarding creating a new business (Fayolle & Gailly, 2008). Similarly, in this study, know-why learning refers to values and motivation. Through this knowledge, students are expected to develop the right attitudes and motivation for entrepreneurship through creation of awareness of entrepreneurship. They were expected to build their own values and motivations to develop favourable attitudes towards creating new businesses through the entrepreneurial courses they have attended.

Consequently, a five items questionnaire was adapted from previous work of Lo, (2011). Respondents were required to choose the appropriate responses that correspond with their level of disagreement or agreement with the EE courses they have attended on a 1-7 point scale. The measure was used by the previous work of Lo (2011) with an alpha of 0.878. Table 3.6 shows the original and adapted items used to measure know-why competency.

Table 3.6

Measure of Know-why: The original and revised item wordings

Variables	Item	Original Wordings	New Wordings	References
Know-why	KWY1	The entrepreneurship course increases my understanding of the altitudes of entrepreneurs(i.e., how they view entrepreneurship and why they act)	The entrepreneurial courses increase my understanding of the attitudes of entrepreneurs (i.e., how they view entrepreneurship and why they act).	Lo (2011)
	KWY2	The entrepreneurship increases my understanding of the importance of entrepreneurship to both the society and the individuals*	The entrepreneurial courses increase my understanding of the importance of entrepreneurship to the society.	*Split item
	KWY3		The entrepreneurial courses increase my understanding of the importance of entrepreneurship to the individual.	
	KWY4	The entrepreneurship course increases my understanding of the personal characteristics of entrepreneurs (e.g., risk-taking, innovation, etc.)	The entrepreneurial courses increase my understanding of the personal characteristics of entrepreneurs (e.g., risk-taking, innovation, etc.)	
	KWY5	The entrepreneurship course give me a sense that entrepreneurship is achievable	The entrepreneurial courses give me a sense that entrepreneurship is achievable	
	KWY6	The entrepreneurship course increases my understanding of the motives of engaging in entrepreneurial activities (e.g., money, self-achievement, social status, etc.).	The entrepreneurial courses increase my understanding of the motives of engaging in entrepreneurial activities (e.g., money, self-achievement, social status, etc.).	

3.6.11 Measurement of Know-when Competency

Know-when knowledge refers to intuition and insights. Also, intuitions are frequently considered as mental shortcuts, heuristics that are highly susceptible to unreasonable biases (Kahneman & Tversky, 2013). One has to trust his intuition in order to take action on facts that do not make sense when analysed explicitly. Intuition is described as the ability to make a judgment based on limited information.

Intuition mobilizes not only cognitive resources but affective ones as well (Westcott, 1968).

In addition, entrepreneurs discover obstacles and options in their career by the successful or unsuccessful launching of a new venture, which makes them accumulate experiences. Measures of this construct will assess how entrepreneurial courses they have attended help to develop the ability to know the right time to act entrepreneurially. As such, questionnaire items for this variable were adapted from previous study of Carlson (2008). Respondents were asked to show their level of disagreement or agreement with the EE courses they have attended on a scale of 1- 7 points (strongly disagree to strongly agree). This measure was adapted from a previous study by Carlson (2008) with a cumulative reliability alpha of 0.523. Table 3.7 shows the original and adapted items used to measure know-when competency.
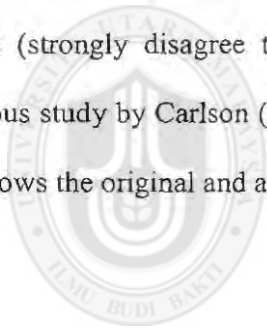
Table 3.7
Measure of Know-when: The original and revised item wordings

Variable	Item	Original Wordings	New Wordings	References
Know-when	KWN1	After working on a problem for a long time, I like to set aside for a while before making a final decision	The entrepreneurial courses encourage me to refer to my instincts before making final decision	Carlson (2008)
	KWN2	When working on a problem, I prefer to work slowly so that there is time for all the pieces to come together.	The entrepreneurial courses encourages me to put all pieces together when working on a problem	
	KWN3	I usually make a better decision when I sleep on it first.	The entrepreneurial courses encourages me to sleep over an issue before making final decision	
	KWN4	My instincts in my areas of expertise are much better than in areas I do not know well.	The entrepreneurial courses to rely on instincts in my areas of expertise than areas I do not know well	
	KWN5	When I have much experience or knowledge about a problem, I almost always trust my intuitions	The entrepreneurial courses encourages me to trust my intuitions in areas I have much knowledge or experience	

3.6.12 Measurement of Creativity

The study measured creativity using the Nicholas Holt Creativity Test (NHCT) which is an instrument consisting of twenty-nine items developed by Nicholas Holt to test the creativity levels of individuals in areas of originality flexibility, fluency, and traits elaboration etc. Previous studies have used this scale to measure individual creativity among students (e.g., Bolandifar & Noordin, 2013; Naderi, Abdullah, Aizan, Sharir, & Kumar, 2010; Olatoye, Akintunde, & Yakasai, 2010). Based on this measure, respondents were asked to show their level of disagreement or agreement to a statement on a 1-7 points Likert scale ranging from '1' (strongly disagree) to '7' (strongly agree). NHCT is a 29 item scale developed to measure creativity among students. The measure was tested and re-tested and a reliability coefficient of 0.88

was obtained (Olatoye et al., 2010). Table 3.8 shows the original and adapted items used as a measure of creativity.

Table 3.8

Measurement of individual creativity: The original and revised item wordings

Variable	Item	Original Wordings	New wordings	References/comments
Individual creativity	CRT1	Making discoveries through trial and error	I often make discoveries through trial and error.	Olatoye et al., 2010.
	CRT2	Trusting hunches and instincts	I often trust my hunches.	
	CRT3	Ideas arising whilst dreaming	I often have ideas arising whilst dreaming.	
	CRT4	Methodical and systematic problem-solving	I am methodical and systematic in problem-solving.	
	CRT5	Sudden moments of inspiration in waking life	I often have sudden moments of inspiration in waking life.	
	CRT7	A sense of communicating with a deeper sense of self	I often have a sense of communicating with a deeper sense of self.	
	CRT8	The careful selection of ideas	I am often careful in selection of ideas.	
	CRT9	Loose, playful, unconstrained thinking	I often have moments of loose, playful, unconstrained thinking.	
	CRT10	Following your intuition	I often follow my intuition.	
	CRT11	Ideas arising as falling asleep and waking up	I often have ideas arising as falling asleep or waking up.	
	CRT13	Paying attention to visual imagery	I often pay attention to visual imagery.	
	CRT14	Experiences losing track of time when involved in a creative work	I often lose track of time when involved in creative work.	
	CRT15	Playing with ideas	I often play with ideas.	
	CRT16	Luck, chance, fortunate accidents	I often have moments of luck, chance, 'fortune accidents.	
	CRT17	The use of analogy	I often make use of analogy.	
	CRT18	A sense of purpose that seems to come from beyond the self	I often have a sense of purpose that seems to come from beyond the self.	
	CRT19	Recombining existing elements in new ways	I often recombine existing elements in new ways.	
	CRT20	Working with a set goal or outcome in mind	I often work with a set goal or outcome in mind.	
	CRT21	A sense of channeling information	I have a sense of channeling information.	
	CRT22	Paying attention to auditory impressions	I often pay attention to auditory impressions.	
	CRT23	Daydreaming	I often have moments of day dreaming.	

Table 3.8 (Continued)

Variable	Item	Original Wordings	New wordings	References/ comments
	CRT24	The release of negative emotions	I do not release negative emotions.	
	CRT25	Non-verbal modes of thinking	I often have non-verbal modes of thinking	
	CRT26	Positive emotions e.g., joy, excitement, euphoria	I often have positive emotions, e.g. joy, excitement, euphoria	
	CRT27	Paying attention to bodily feelings	I often pay attention to bodily feelings	
	CRT28	A sense of communicating with something other	I often have a sense of communicating with something other	
	CRT29	A sense of being in tune with nature or the universe	I often have a sense of being in tune with nature or the universe	

3.7 Measurement of Reliability and Validity of Instrument

Tests of validity and reliability were conducted on the data to ensure goodness of the measures of the adapted items. The items adapted to measure constructs must be correctly measuring the construct and actually measuring the variable that is to be measured. The reliability measures the consistency and stability of the adapted measurement in measuring the concept (Cavana *et al.*, 2001; Hair Jr. *et al.*, 2010). Reliability tells the extent to which particular adapted items in a study will produce the same results on different occasions (Greener, 2008).

3.7.1 Validity of Research instruments

The validity of a research instrument refers to how accurate the data obtained for the study represents the study variables (Saunders, Lewis, & Thornhill, 2009). If such data is a true reflection of the variables, the inferences based on such data will be accurate and meaningful and vice versa. To put it differently, the validity of a

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construct refers to the extent to which the instruments, methods or measures used in a study truly measure what it is made-up to describe or measure (Lancaster, 2005). It concerns the proof that the instrument, method or procedure used in a study is suitably measuring the intended concept (Hair Jr. *et al.*, 2010; Sekaran & Bougie, 2010). Validity are of different types including; construct validity, face validity, content validity, concurrent validity, predictive validity, statistical validity, internal and external validity (Vanderstoep & Johnston, 2009). Specifically, Greener (2008) advocates the significance of face validity, internal validity, and constructs validity. He contends that construct validity is one of the significant features of data analysis.

Consequently, face validity test was conducted to confirm the validity of the items on the face of it measuring the supposed construct. Also, this study conducts the construct validity to confirm that the items are actually measuring what the study has been operationalised to measure. Essentially, it is used to attest whether the results obtained from the use of the adapted items can fit the theories around which the test was designed. This study used convergent validity and discriminant validity to determine construct validity (Hair Jr., Hult, Ringle, & Sarstedt, 2013; Vanderstoep & Johnston, 2009).

3.7.2 Reliability of Research Instruments

Reliability is a measure of the degree to which a research instruments used yields consistently the same data or results after repetitive trials. Reliability means consistency of measurement; the more reliable the measuring instrument is, the more consistent will be the measure (Garg & Kothari, 2014; Oppenheim, 2000). Reliability

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is subjective to random error. Specifically, random errors refer to errors with respect to some items measuring related construct. "Random errors tend to average-out across numerous items; errors that increases scores on one item likely to be balance by errors understate other items" (Schwab, 2013). The higher the random error, the lower would be the reliability. In view of this, the researcher administered the same instrument to the same group of respondents twice with a view to minimizing random error and increase the reliability of the instrument.

Like with several studies, this study used Cronbach's alpha in the pilot study and employs composite reliability in the main analysis to determine the internal consistency of the measurement scale adapted. Reliability evaluates the stability of the scale based on an evaluation of the internal constancy of the items measuring the construct. The most commonly used measure of reliability of a construct is the cronbach's alpha.

3.8 Pilot Study/Preliminary Test

A pilot study is a trial involving a limited number of the study population before performing the full-scale study (Gay, Mills, & Airasian, 2006). The aim of pilot testing is to help to identify ambiguities, misunderstandings, uselessness or inadequacy of items in the instruments to be used. Preliminary analysis using the pilot test data was undertaken to ensure that the data collected would enable the researcher to investigate questions raised by the study. Also, pilot study would give an insight to the actual condition for full scale study. Pilot study enabled the researcher to anticipate likely problems as well as extend solutions to the imminent

problem. Pilot study questionnaire was self-administered to 68 students of Higher Diploma from Abdu Bako College of Agriculture, Danbatta in Kano State. Students were selected based on simple random sampling technique.

In the current study, a pilot test was conducted to test the reliability and validity of the survey instrument as well as to catch a glimpse of the real conditions of the impact assessment. This will allow the researcher to anticipate potential problems while embarking on the actual research and adjust accordingly. The reliability and validity of research instruments is one of the major concerns of a pilot study. Whereas reliability measures the extent to which an instrument is consistent, stable, and error free across the various items of the scale, validity measures the extent to which an instrument is measuring what it should be measuring (Sekaran & Bougie, 2010).

3.8.1 Validity test

In this study, content/face validity was conducted to measure how well an instrument measures what it is supposed to measure. Several consultations were held with panel of experts and a small sample of respondents to make judgments on the suitability of items selected to measure the constructs. The study obtained revalidation of study items from seven experts, including professors, associate professors, and senior lecturers in the School of Business, Universiti Utara Malaysia, Ahmadu Bello University, and Bayero University, Kano Nigeria. Equally, the researcher consulted four doctoral students who are familiar with the environment of the study to assess the appropriateness and simplicity of the study instrument. In the process, some

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items were re-phrased or re-worded suitably to measure the intended constructs and also to be implicit to the latent respondents.

After taking into consideration the comments by experts, the researcher adapted an enhanced form of the instrument, which was administered for the pilot study. In most pilot tests, the sample is generally small (Fink, 2003), although it is usual to increase it to 100 responses (Dillman, 2007). Hence, a total of 72 copies of the questionnaires were randomly and personally administered. Of this number, 70 were collected and two were not properly completed, so only 68 responses were analysed. The high response rate of about 94.4 percent was attained due to the distribution and collection of questionnaires personally. The procedure did not last long as the respondents are students that were met in the classroom and given few minutes to respond to the set of questions. Table 4.9 shows the modified questionnaire items after pilot study.

Table 4.9
Modified Questionnaire Items after Pilot Test

S/N	Construct	Initial Item No.	Statement	Modified Item
1	Entrepreneurial career option	ECO8	There is less uncertainty when predicting how well I do with the business introduction	The overall riskness of the venture is low
2		ECO10	Overall, I will label the option of introducing the concept as a business as something positive	The overall option of introducing the business is something positive
3		ECO11	I would label introducing the concept as a potential gain	Introducing the business will a positive effect on my own future
4		ECO12	Introducing the concept will have positive ramifications for my future	Introducing the concept will have positive ramifications for my future
5	Know-what	KWT5	The entrepreneurial courses increase my understanding of market research for entrepreneurial ventures.	The entrepreneurial courses increase my understanding of market and feasibility studies for new entrepreneurial ventures.

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6	Know-how	KHW5	The entrepreneurial courses enhance my ability to identify a business opportunity.	The entrepreneurial courses enhance my ability to identify and exploit a business opportunity.
7	Know-who	KWO3	Views of the professor inspire my entrepreneurial mind.	Views of the lecturers inspire my entrepreneurial mind.
8	Creativity	CRT2	I often trust my hunches or instincts	I often trust my hunches

3.8.2 Reliability Test

Different tests can used to assess the reliability of a measure. Though, the most prevalent method used by researchers to test the inter-item consistency and reliability is the Cronbach's alpha coefficient (Sekaran & Bougie, 2010). The Cronbach's alpha coefficient specifies the extent to which responses to all the items are consistent. After running reliability test through SPSS version 23 for Windows, the result indicates that all the measures had a high reliability standard ranging from 0.7 to 0.9. This is in line with the criterion suggested by Hair Jr. *et al.* (2010) and Sekaran and Bougie (2010), that a Cronbach's alpha coefficient of 0.60 is considered an average reliability, while a coefficient of 0.70 or higher indicates that the instrument has a high standard of reliability. For this study, the Cronbach's alpha coefficients are shown in table 3.10.

Table 3.10
Number of Items and Cronbach's Alpha Values

Construct	Number of Items	Cronbach's alpha value
Entrepreneurial Career Option	28	0.949
Know-What	5	0.894
Know-How	5	0.853
Know-Who	6	0.879

Know-Why	6	0.892
Know-When	5	0.798
Creativity	28	0.948

*Note that all the constructs have a cronbach's value of 0.7 and above. Therefore, all study constructs are reliable.

Table 3.10 shows the summary of the test of reliability results. From the result, it is evident that result of the pilot test shows that Cronbach's alpha values for the individual constructs under examination are all above the minimum threshold. As a result, given the established yardstick of 0.70, it was decided that all the constructs are reliable, and thus the removal of any item was unwarranted.

3.8.3 Method of Data Analysis

After the researcher has collected adequate data to meet sampling requirements, the researcher assigned codes, as well as, summarise and analyse data using SPSS factor analysis and PLS-SEM. Various data collection and analysis methods described the statistical tools and the procedure the researcher used to analyse the data, test research hypotheses, and refine theories. For the purpose of this study, inferential and descriptive statistics was employed to analyse data. Partial Least Square Equation Modelling (PLS-SEM) was adopted in analysing the data.

The Partial Least Square (PLS-SEM) is a second-generation structural equation modeling technique (Wold, 1982). It is a new method that works well with structural equation models (SEM) that comprises latent variables and a sequence of cause and effect relationships (Gustafsson & Johnson, 2004). The PLS-SEM method was

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described as a good and flexible tool for statistical model structure and prediction (Ringle, Wende, & Will, 2012). The PLS technique is found suitable for this study for some reasons. In the first instance, structural equation models have demonstrated to be superior models that are capable of performing approximations better than regressions for assessing mediation (Lacobucci, Saldanha, & Deng, 2007; Mattanah, Hancock, & Brand, 2004; Preacher & Hayes, 2004). PLS has been described to account for measurement error and can provide more accurate estimates of mediating effects (Chin, 1998). Also, PLS path modelling is quite suitable for real-world applications and more advantageous for practical applications and suitable to use with complex models (Fornell & Bookstein, 1982; Hulland, 1999).

Equally, PLS's capacity to openly develop and validate compound models gives it an added benefit of estimating huge compound models (Akter, D'Ambra, & Ray, 2011). The present study examines the relationship among seven variables; entrepreneurial career option, know-what, know-how, know-who, know-why, and know-when, and creativity in the structural model and as such engaged PLS-SEM as appropriate for better prediction.

Also, in social science studies, there is the likelihood of normality delinquent (Osborne, 2010) and PLS path modeling does not necessarily require data to be normal (Chin, 1998). This means that PLS treats non-normal data relatively well. Recently, however, it was suggested that reporting the skewness and kurtosis of data which is associated with normality (Hair, Ringle, & Sarstedt, 2013). Further, PLS-SEM offers more significant and valid results, while other methods of analysis such

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as SPSS often result in less clear conclusions and required several separate analysis (Bollen, 1989). Furthermore, Tabachnick and Fidel (2007) described SEM as one of the most powerful statistical tools in social and behavioural sciences that have the ability to test several relationships simultaneously.

In this study, however, SmartPLS 3.2.7 path modelling procedure was used to assess the measurement and structural models. In the current study, the measurement model was utilised to enlighten or evaluate construct's validity and reliability. Also, the structural model was used to conduct simultaneous regressions analysis and bivariate correlation analysis to establish correlations and relationship effects among the constructs under examination. Therefore, the PLS bootstrapping mechanism was used to analyse the mediating effect of creativity (mediator) on the relationship between know-what, know-how, know-who, know-why, know-when (independent variables), and entrepreneurial career option (dependent variable).

3.9 Summary of the Chapter

The chapter explained the relationship between the variables in the theoretical framework of the study. The chapter explained that the study adopted cross-sectional survey research design with the population of final year HND students of polytechnics in the northwest geopolitical zone of Nigeria. The unit of analysis was the individual which was stated clearly and the operationalisation and measurement of study constructs were sufficiently discussed. Multi-stage stratified random sampling procedure was used to select polytechnics within which the sample was drawn. Simple random sampling method was used to select a sample size of 505

students. Survey questionnaires were self-administered to the HND students who have studied entrepreneurial courses during their National Diploma (ND) programmes and in the course of their study at HND level. Questionnaire items were adapted from previous studies. Questionnaire items were validated through expert opinion and the process explained accordingly. Finally, the study used SPSS version 23 for Windows to conduct descriptive statistics, reliability and validity tests.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

In this chapter, analysis of results was conducted by the use of Partial Least Square (PLS-SEM) modelling path. As a prelude to the analysis and presentation of the results, preliminary analysis functions of screening of data and cleaning were performed. Also, missing values and outliers were detected and treated, and descriptive statistics was done accordingly. After that, the main data analysis was performed beginning with the analysis of the measurement/inner model. In this regard, validity and reliability analysis were conducted. Furthermore, the analysis of structural model was performed with respect to the path coefficients and t-values. Similarly, the predictive relevance of the R^2 and the effect size (f^2) was presented and analysed. Lastly, in this chapter, an analysis of the mediation results of the study is performed and presented.

4.2 Response Rate

Data collection process for this study involves the distribution of 505 questionnaires to final year HND students of the polytechnics sampled. From this number, 425 questionnaires were responded to and returned, representing 84.2 percent of the total questionnaires distributed. In all, 77 questionnaires, representing 15 percent were found unusable as such exempted from analysis, leaving 348, representing 68.9 percent as usable responses. These 77 questionnaires exempted from the analysis were actually found to be outliers, therefore, removed (Hair, Anderson, Tatham &

Black, 1998). Table 4.1 explains the distribution of the questionnaire and the response rate.

Table 4.1

Distribution of questionnaires and Rate of Responses

Questionnaires	Frequency	Rate (%)
Questionnaires Distributed	505	100
Unresponded/Unreturned	80	15.8
Retrieved questionnaires	425	84.2
Rejected/Removed	77	15.2
Retained/Usable	348	68.9

The total usable response to the study questionnaire is rated 68.9 percent. A response rate of 68.9 percent is quite adequate for data analysis in the current study. Scholars have argued that it is not a mandatory requirement for a researcher to achieve 100 percent response rate for his/her result to be valid and generalizable. In fact, Babbie (2007) is of the view that a 70 percent rate of response is considered as extremely good, 60 percent can be considered as good, while even 50 percent rate of response is considered as adequate for analysing and reporting a study result. Furthermore, Sekaran (2003) has argued that a response of 30 percent is adequate for analysis in a research study. Hence, the response rate of 68.9 percent achieved in this study was good.

Meanwhile, the G* power statistical analysis sample prediction tool uses predictor's size, study model, and level of alpha to define the size of a study sample assumes

that the minimum sample size of 146 samples is adequate for this study. Similarly, with regards to the Dilman's (2007) and Krejcie and Morgan's (1970) table of sample size determination, 361 samples were regarded as the recommended sample size of the study. Going by this, 348 usable responses is equivalent to 96.4 percent of the initial sample size. This size is quite adequate for analysis in this study.

4.3 Preliminary Analysis

Initial analysis is required to be conducted prior to actual statistical analysis to answer the research questions in a study (Pallant, 2010). However, in the process of conducting such preliminary analysis, the data must be coded and entered in to a file, depending on the nature of the study. In this regard, Statistical Package of the Social Sciences (SPSS) version 23 for windows was used in conducting preliminary analysis.

4.3.1 Coding and Screening of Data

Retrieved and duly completed questionnaires were entered in to the SPSS version 23 view page for variables. Initials were created to represent each variable in accordance with serial position with respect to the study constructs. Twenty-eight questions used to measure entrepreneurial career option which was initialed as ECO; and labelled as ECO1 to ECO28. For instance, question number one measuring entrepreneurial career option was coded as ECO1 and the questionnaire item was stated as 'The entrepreneurial courses increase my understanding of generating innovative ideas'. Similarly, questions designed to measure know-what competencies were labelled as

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KWT1 to KWT5. The same procedure applies to the remaining variables up to the mediating variable (creativity), which was coded as CTR1 to CRT28.

After entering all the questionnaire responses into the SPSS, the data was ready for screening to detect missing responses or values and outliers (Bhatti, Hee, & Sundram, 2012). In addition to missing values replacement and outlier treatment, the researcher also performed tests of multicolinearity and normality as suggested by scholars (Hair, Babin, & Anderson, 2010).

4.3.2 Treatment of Missing Values

When conducting a survey research, it is unusual to obtain a data set that is complete, because human beings are not infallible (Pallant, 2010). Therefore, the researcher must identify and treat missing values. This was conducted through the generation of a table of frequency through descriptive statistics. Out of the total of 37,825 data points in the data set, 38 were found missing. This represents 0.001 percent of the amount of data obtained. To be precise, employment experience has 6 missing values, ECO has 8, know-what has 1, know-who has 4, and CRT has 19 missing values. Table 4.2 presents a summary of missing values detected and treated.

Table 4.2
Analysis of Missing Values

S/N	Latent Variable	Missing Cases
1.	Employment experience	6
2.	Entrepreneurial career option (ECO)	8
3.	Know-what (KWT)	1
4.	Know-who (KWO)	4
5.	Creativity (CR)	19
	38 out of 37,825 data points (0.001%)	

4.3.3 Outliers Assessment

An outlier is any value that is dissimilar to other values in a data set (Hodge &
Austin, 2004). They remarkably differ from other observations by combining certain
distinctive characteristics (Hair et al., 2010). Outliers must be discarded because
they evolve as a result of a great deviation from the direction of other observations
(Grubbs, 1974). Outlier may also exist due to error in calculation or recording
observations. Whatever the cause, the presence of outliers in a set of data can lead to
wrong conclusions because of their effect on coefficients estimation (Verardi &
Croux, 2008). The current study used descriptive statistics to analyse the variables
and checked the minimum-maximum statistics with a view to identifying any value
above the scale range that might have been mistakenly entered. However, no value
was observed to have exceeded the variable scale range.

The common methods of detecting outliers are univariate, multivariate, and boxplot (Hodge & Austin, 2007). Outlier detection using univariate method suggests that any observation having a standard value of plus or minus ±3.29 (p<0.001) is an outlier and should, therefore be deleted from the data set (Tabachnick & Fidell, 2007). Furthermore, Hair et al. (2010) suggested that, in univariate outlier detection of metric variables, any observation having a standard score of between ± 2.5 to 4, depending upon the size of the sample (eg., scores 80 and below; 2.5 to 3, and larger samples attracts 4) are considered as an outlier and therefore be deleted. Using the univariate method, 11 cases of outliers were detected and deleted from the data set, including; 188(-3.443), 410(-3.443), 202(-3.443), 44(-3.443), 226(-3.443), 47(-3.443), 69(-3.443), 65(-3.494), 211(-3.494), 335(-3.494), and 411(-3.494).

Similarly, the multivariate outlier detection was performed through Mahalanobis Distance (D^2), which signifies the distance to the centroid (intersection of all variable mean score) to the remaining observations (Tabachnick & Fidell, 2007). The level of inception of the Mahalanobis distance is 0.01 (Hair, Black, Babin, Anderson, & Tatham, 2006; Hair et al., 2010). After all, Hair et al. (2010) described outlier detection through the multivariate approach as the most suitable method for multivariate analysis. Consequently, the study had included the multivariate approach using the Mahalanobis distance (see appendix B). Therefore, all affected cases of univariate and multivariate outliers detected were removed accordingly.

4.3.4 Test of Normality

Normality is a multivariate analysis assumption that concerns the shape of a metric variable distribution and how it corresponds with normal distribution (Hair et al., 2010). In the past, researches have affirmed that PLS-SEM can function effectively with data that is not normal (Qureshi & Compeau, 2009; Reinartz, Haenlein, & Henseler, 2009; Wetzels, Odekerken-Schroder, & van Oppen, 2009). Notwithstanding, some scholars have argued that standard errors of bootstrapping may increase when a data set is appallingly skewed (Chernick, 2008), and path coefficients significance may be affected (Chernick, 2008; Hair, Sarstedt, Pieper, & Ringle, 2012). This justifies the need to look at the distribution of data to ascertain its normality position (Hair et al., 2012; Hair et al., 2014).

Consequently, multivariate normality was used to evaluate the distribution of the data based on kurtosis and skewness. Kurtosis describes the peakedness or flatness of a distribution when compared with normal distribution, while skewness signifies how the distribution tends to tilt to the centre (Hair et al., 2010). Again, researchers have argued that various statistical programmes have empirical measures of kurtosis and skewness (Hair et al., 2010). Researchers have argued ±2.58 is the critical value for kurtosis and skewness of a data distribution (Bhatti et al. (2012). Results generated in table 4.3 showed the skewness and kurtosis of the distribution is below the benchmark of ±2.58. Others still, argue that a skewness values should be less than 2, while kurtosis should not be greater than 7 (Tabachnick & Fidel, 2007).

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Table 4.3
Test of Normality –Skewness and Kurtosis (n=348)

Construct	Min Sta.	Max. Sta.	Mean Sta.	Stdv Sta.	Skewness		Kurtosis	
					Sta	Std Error	Sta.	Std Error
Entrcarop	2.04	7.00	5.6729	.93768	-1.022	.131	.983	.261
Knowwhat	2.20	7.00	5.9414	.99045	-1.150	.131	1.523	.261
Knowhow	1.40	7.00	5.8201	1.02833	-1.173	.131	1.897	.261
Knowwho	1.50	7.00	5.6686	1.02701	-1.047	.131	1.643	.261
Knowwhy	1.50	7.00	5.4751	1.03091	-.765	.131	0.868	.261
Knowwhen	2.40	7.00	5.5868	.96829	-.669	.131	.190	.261
Creativity	2.04	7.00	5.6310	.90712	-.998	.131	1.410	.261

4.3.5 Multicollinearity

Multicollinearity is the relationship among two or more independent variables, where the independent variables show little association with the other exogenous variables (Hair Jr. *et al.*, 2010). Multicollinearity exists where the exogenous variables are highly interrelated to one another (Hair Jr. *et al.*, 2010; Pallant, 2010; Tabachnick & Fidell, 2013). Hence, whenever two or more constructs are extremely connected, it signifies that they possess needless information which is not desired in the same analysis because they can escalate the error terms. Also, existence of multicollinearity increases the standard error of the regression coefficient which may result to the statistical significance of the coefficients turn out to be less reliable.

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One of the common methods of testing multicollinearity is to examine the values of tolerance and Variance Inflation Factor (VIF). Hair et al. (2014) recommend a tolerance level of 0.20 and less and a VIF value of ranging from 5 and above signifies the existence of multicollinearity. This means that 80 percent of a variable difference is being explained by other variables of the same model. Consequently, in the present study, tolerance and VIF assessment result shows that the study is not affected by multicollinearity as all the values (tolerance and VIF) of the entire variables are below the recommended threshold as depicted in table 4.4.

Table 4.4
Multicollinearity Test: Tolerance and VIF

Construct	Collinearity Statistics	
	Tolerance	VIF
Knowwhat	.362	2.763
Knowwho	.347	2.884
Knowwhy	.381	2.622
Knowwhen	.445	2.246
Creativity	.235	4.251

Another method of multicollinearity assessment is through the correlation matrix of the independent variables. Hair Jr *et al.* (2010) argued that there is existence of multicollinearity when the correlation among exogenous variables is up to 0.9 or more. However, Pallant (2010) posits that a correlation value greater than 0.7 is the yardstick for the presence of multicollinearity. In line with above argument, none of the exogenous variable in this study is up to the critical benchmarks. Precisely, the correlation matrix table of this study is presented in table 4.5.

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Table 4.5
Test of Multicollinearity Using Correlation Matrix

Construct	1	2	3	4	5	6
Know-what	1					
Know-how	.835**	1				
Know-who	.740**	.787**	1			
Know-why	.554**	.594**	.610**	1		
Know-when	.620**	.648**	.662**	.632**	1	
Creativity	.741**	.741**	.742**	.772**	.694**	1

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

4.3.6 Test of Non-Response Bias

The inability of the research to obtain data from some of the respondents is termed non-response, whereas the outcome of this failure is non-response bias (Hawkins, 1975). Scholars like Collier and Bienstock (2007) have argued that although a change in non-response rate may not favourably alter a survey results, it may have a possible impact on the quality of research result. As such, it may significantly differ on its ability to generalise result findings. This is because, if respondents differ significantly from those who do not respond, the result may be difficult to generalise to the entire universe of the study (Armstrong & Overton, 1977).

The absence of data obtained from non-respondents elements makes it impossible to test the difference between those who responded and those who did not respond. Therefore, researchers suggested that early and late respondents be used to compare and analyse non-response bias (Finn, Wang, & Lamb, 1983). Hence, subjects who

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responded less-rapidly are similar to those who did not respond at all (Finn, Wang, & Lamb, 1983). Also, Finn et al. (1983) have contended that the less quick response is termed as responding later, perhaps as a result of added insistence to answer, while Armstrong and Overton (1977) maintained that later responses are presumed to have responded owing to increased inducement, therefore, believed to have comparable features with non-response elements.

In line with above argument, this study's responses were divided into early and late responses based on the time the questionnaires were actually returned to the researcher (Vink & Boomsma, 2008). The early response group consists of those that responded from 20th July, 2017 to 30th September, 2017. The second group of respondents returned after 30th September, 2017. Based on the groupings, 278 questionnaires were returned early (majority), while 70 consists of late response group. Table 4.6 shows the mean and standard deviation of the early and late respondents.

Table 4.6
Group statistics

Constructs	Group	n	Mean	Std. Deviation	Std. Error Mean
Know-what	Early Response	278	6.00	0.92	0.06
	Late Response	70	5.71	1.21	0.14
Know-how	Early Response	278	5.84	0.97	0.06
	Late Response	70	5.74	1.23	0.15
Entrepreneurial Career Option	Early Response	278	6.00	0.92	0.06
	Late Response	70	5.71	1.21	0.14
Creativity	Early Response	278	5.62	0.85	0.05
	Late Response	70	5.67	1.12	0.13
Know-who	Early Response	278	5.67	0.95	0.06
	Late Response	70	5.68	1.29	0.15
Know-why	Early Response	278	5.44	0.98	0.06
	Late Response	70	5.60	1.22	0.15
Know-when	Early Response	278	5.57	0.94	0.06
	Late Response	70	5.65	1.06	0.13

Table 4.7
Independent Sample Test

Constructs		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Know-what	Equal variances assumed	3.425	0.065	2.158	346	0.032	0.284	0.132	0.025	0.543
	Equal variances not assumed			1.841	90.294	0.069	0.284	0.154	-0.023	0.591
Know-how	Equal variances assumed	2.304	0.130	0.729	346	0.467	0.100	0.138	-0.170	0.371
	Equal variances not assumed			0.634	91.879	0.528	0.100	0.158	-0.214	0.414
Entrepreneurial Career Option	Equal variances assumed	4.189	0.041	2.098	346	0.037	0.262	0.125	0.016	0.507
	Equal variances not assumed			1.886	94.701	0.062	0.262	0.139	-0.014	0.537
Creativity	Equal variances assumed	6.807	0.009	-0.443	346	0.658	-0.054	0.121	-0.293	0.185
	Equal variances not assumed			-0.377	90.031	0.707	-0.054	0.143	-0.388	0.230
Know-who	Equal variances assumed	4.403	0.037	-0.069	346	0.945	-0.010	0.138	-0.280	0.261
	Equal variances not assumed			-0.058	88.830	0.954	-0.010	0.164	-0.336	0.317
Know-why	Equal variances assumed	1.980	0.160	-0.091	346	0.276	-0.150	0.138	-0.421	0.121
	Equal variances not assumed			-0.958	92.651	0.340	-0.150	0.157	-0.462	0.161
Know-when	Equal variances assumed	0.323	0.570	-0.569	346	0.570	-0.074	0.130	-0.329	0.181
	Equal variances not assumed			-0.530	98.082	0.597	-0.074	0.139	-0.350	0.203

In this study, independent sample t-test was used to test the significance level of the difference between the response groups. Therefore, Levene's test for equality of variance was used at 0.05 level of significance (Coakes, 2013; Field, 2009; Pallant, 2010). Table 4.7 indicates that there is no significant difference between the early and late respondents' groups. Essentially, there is no significant difference between

early response and late response for KWT, KHW, KWY, KWN, and CRT. Thus, the study presumed that there was no non-response bias in the data. Hence, the responded subjects represent all other elements of the population of the study, as such the results of the study can be generalised to the entire study population. Moreover, the response rate is significantly above 50 percent, as such the issue of non-response bias is not a major concern in this study (Lindner & Winggenbach, 2002).

4.3.7 Common Method Bias

Common method bias (CMB) is a bias subjected to common method variance (CMV). CMV is a variance attributable to method of measurement rather than the variable intended to represent (Cambell & Fiske, 1998; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). It is a false relationship between variables produced by using same method to measure all study variables (Malhotra, Kim, & Patil, 2006; Podsakoff et al., 2003). Thus, this may lead to invalid conclusions about relationship between variables by inflating or deflating the results (Conway & Lance, 2010, Podsakoff et al., 2003, Podsakoff, MacKenzie, & Podsakoff, 2012).

However, CMB has turned out to be a problem in behavioural science research, and deliberations of its possible effects are on-going for decades now (Campbel & Fiske, 1998). Until now, it draws scholarly attention due to its probable problems (Lindel & Whitney, 2001; Podsakoff et al., 2003; Spector, 2012). CMB is considered a potential problem because it is major source of measurement error (Podsakoff et al., 2003). Measurement error, on the other hand, threatens the validity of conclusions

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about the relationship between constructs, and as such errors are classified into random error and systematic error (Bagozzi & Yi, 1991). Even though both types of errors are stubborn, systematic error is considered more severe because it provides bogus explanation for the relationship between measures of different constructs (Campbell & Fiske, 1998; Podsakoff et al., 2003).

Equally, random error is concerned about errors that occur when quite a lot of items are measuring the same construct. This type of error is a commonly found problem in research where more items tend to be measuring the same construct. Hence, scholars explain that "random errors tend to average out across several items; errors that inflate scores on one item tend to be offset by errors understate other items" (Swhwab, 2013, p.29). He further maintained that random errors are common problem of research. Therefore, the more items for a construct, the more successful random errors are reduced or eradicated. On the other hand, systematic errors, either due to method or measurement, is a type of error which is more harmful, and can rigorously increase or decrease the perceived relationship between independent and dependent variables (Rungtusanatham, Choi, Hollingworth, Wu, Forza, 2003). Accordingly, random and systematic errors can nullify research findings (Podsakoff et al., 2003).

For the time being, this study assesses CMV because it is a self-reported study which is affected by method bias (Lindell & Whitney, 2001; Spector, 2006). Subsequently, to identify and assess method bias, two methods were involved as suggested by previous researchers (Podsakoff et al., 2003; MacKenzie & Podsakoff, 2012;

Podsakoff et al., 2012; Viswanathan & Kayande, 2012). Essentially, procedural remedies describe the several processes taken into cognisance during the design and administration of questionnaires to avert or offset the difficult effects of erroneous responses (Chang et al., 2010; MacKenzie & Podsakoff, 2012). Part of the remedies adopted includes evading complex wordings, syntax, and occurrence of double-barrel questions. Also, the scale items were written in a flawless and precise way, which is less exposed to bias. Secondly, the researcher provided clear instructions on how to complete the questionnaire, and a clear definition of each concept in order to avoid misperception. Thirdly, the respondents have been clearly informed that there is no preferred or correct answer; all what is desired for them is to be frank and objective. Lastly, the researcher has ensured the anonymity and confidentiality of the respondents, which was written boldly on every copy of the questionnaire.

Although the use of procedural remedies often minimize or even eliminate the damaging effects of method bias, it is usually difficult, if not impossible for a research to find procedural remedy that meets all its requirements (Podsakoff et al., 2003; Podsakoff et al., 2012). Moreover, there is no statistical evidence that the method variance is not the concern of a study. Nevertheless, statistical remedies cannot be viewed as an alternative to the procedural remedies but rather a compliment (MacKenzie & Podsakoff, 2012).

Statistical remedies are employed after data have been collected unlike procedural remedies that are performed prior to data collection exercise. This study employed one of the most commonly used statistical remedies in the literature, which is

Harman's single-factor (Podsakoff et al., 2003). This technique has been used by several researchers to address the problem of common method variance (Aulakh & Gencturk, 2000). To test method bias using Harman's (1968) single factor, all items of the principal constructs are to be entered into principal component factor analysis (Podsakoff & Organ, 1986). Therefore, it indicates existence of method bias when the factor analysis provides only one single factor, or when a single factor represents the greatest part of the covariance among the measures (Podsakoff et al., 2003).

Following the above-mentioned Harman's single-factor statistical remedy of method variance, all the items of the whole constructs of this study were factor-analysed using unrotated factor solution. Hence, the analysis yielded 7 constructs explaining 67 percent of the cumulative variance (see appendix D). Besides, the first factor explained only 15 percent of the total variance (Kumar, 2012). Based on the above results of the Harman's single factor analysis, it is assumed that the common method variance does not affect constructs of this study (Podsakoff et al., 2003).

4.3.8 Demographic Characteristics of Respondents

This section presents an analysis of the demographic characteristics of respondents in terms of distribution and percentage. Specifically, the demographic characteristics of respondents comprises of gender, chronological age, marital status, employment experience, and their entrepreneurial experiences. Therefore, the frequencies and percentage distribution of the respondents are presented in Table 4.8.

Table 4.8
Demographic Characteristics of Respondents

S/N	Characteristics	Frequency		Percentage	Valid percentage	Cumulative percentage
1	Gender	Male	226	64.9	64.9	
		Female	122	35.1	100	
2	Age	Less than 20 years old.	16	4.6	4.6	
		20-29 years old.	258	74.1	78.7	
		30-39 years old.	62	17.8	96.6	
		40-49 years old.	11	3.2	99.7	
		50 years and above.	01	.3	100	
3	Marital Status	Married	80	23	23.0	
		Single	245	70.4	93.4	
		Widowed	17	4.9	98.3	
		Divorced	6	1.7	100	
4	Work Experience	Employed	76	21.8	21.8	
		Unemployed	148	42.5	64.4	
		Self-employed	124	35.6	100	
5	Self-employment Experience	Young entrepreneur- less than 3 years	222	63.8	63.8	
		Old entrepreneur -3-5 years	61	17.5	81.3	
		Old entrepreneur -6-10 years	48	13.8	95.1	
		Old entrepreneur -11 years and above	17	4.9	100	

From the distributions in the Table 4.8, it is apparent that all respondents to the study questionnaire (348) comprise of final year students of higher national diploma (HND) in polytechnics in Northwestern Nigeria. Majority of the respondents were

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male; 226 representing 64.9 percent of usable responses, while 122, representing 35.1 percent were female students. The huge gap between male and female respondents among polytechnic students is consistent with previous studies of education in north-western Nigeria, that female are not disposed to western education in the region as much as men (Adeyemi & Akpotu, 2004; Aja-Okorie, 2010; Kazeem & Stokes, 2010; Tuwor & Sossou, 2008).

With regards to respondent's age group, 16 respondents representing 4.6 percent are less than 20 years of age, 258 respondents representing 74.1 percent are aged between 20-29 years old, 62 respondents representing 17.8 percent are aged between 30-39 years, and 11 respondents representing 3.2 percent are aged 40-49 years, while 1 respondent representing 0.3 percent is aged between 50 and above. The high distribution of respondents among students between the ages of 20-29 years is consistent with previous literature on education in Nigeria under the 6-3-3-4 system. The policy pegs 6 year age to be the date at which pupils should be enrolled into primary school. Then, after spending 6 years in primary school, the child is enrolled into junior secondary school in which the child spends 3 years. Upon graduation from this level, the child is now 15 years of age and ready for enrolment into senior secondary school for another three years of study. The child graduates from secondary school at the age of 18, and gets into tertiary institution to graduate 4 years after; thus 6-3-3-4 system (National Policy on Education (NPE, 2008).

Regarding the respondents marital status, it can be seen from the table 4.8, that 80 respondents representing 23 percent are married, 245 respondents representing 70.4

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percent are single, 17 respondents representing 4.9 percent are widowed, whereas 6 respondents representing 1.7 percent are divorced. The higher number of respondents that are single attests to the fact that most of the students are still dependent on their parents for livelihood as such cannot take the burden of marriage while still unemployed. This is in line with previous studies that, at this age, their main source of sustenance is their parents who as well sponsor their education (Suleiman, 2011).

Pertaining to respondents' previous work experience, 76 respondents representing 21.8 percent are gainfully employed, 148 respondents representing 42.5 percent are yet to be employed (unemployed), while 124 respondents representing 35.6 percent are self-employed. The higher number of respondents (148) that are still unemployed attest to the labour situation in Nigeria where the bulk of the youth and students are unemployed, consistent with previous findings in respect to youth and graduate unemployment situation in Nigeria (Akhuemonkhan et al., 2013; Maina, 2014; Ogbonna, 2015). Similarly, 124 respondents are engaged in self-employment while still pursuing their studies. This is a positive development where youths and graduates are ready to engage ECO to avoid the harsh condition of unemployment after their graduation. The labour market in Nigeria is highly saturated, and the school system is churning out many graduates that the labour market cannot absorb. This is in harmony with earlier findings about the youth and graduates of Nigeria's HEIs (GEM, 2012; 2013; Salami, 2013).

Finally, the respondents' self-employment experience indicates that 222 respondents representing 63.8 percent are young entrepreneurs with less than 3 years' experience

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as entrepreneurs. Also, 61 respondents representing 17.5 percent have between 3-5 year self-employment experiences, 48 respondents representing 13.8 percent have between 6 to 10 year experiences whereas 17 respondents representing 4.9 percent have been in self-employment career option for about 11 years and above. Therefore, majority of the respondents have below 3 years experience of self-employment. This indicates that the objectives of EE policy of government is being realised, as many graduates are ready to engage in entrepreneurship as the desired career option. This is consistent with the findings of Fatoki (2014); Salami (2012); Adeoye (2015); Israel and Johnmart (2015) and NBTE (2008) whose studies showed a significant positive effect of the entrepreneurial courses on students' career decisions.

4.3.9 Descriptive Statistics of Latent Constructs

This section of the study presents an analysis of the descriptive statistics of variables. The mean was obtained by summing up all observed outcomes divided by the number of cases. The standard deviation measures the dispersion of the values of a data set away from the centre. The mean and standard deviation were calculated to establish the descriptive features of the variables. Notably, 7 point Likert scale was used to measure all the study constructs. Therefore, the mean and standard deviation of the study constructs were measured using Likert 7 point scale, represented by 1 equals to 'strongly disagree', 2 equals to 'moderately disagree', 3 equals to 'disagree', 4 equals to 'neutral', 5 equals to 'agree', 6 equals to 'moderately agree', and 7 equals to 'strongly agree'. Precisely, seven-point Likert scale used in the current research was categorised into 3 dimensions; low, medium, and high. Notably, a score of less than 2.33 is low, 2.33 to 3. 67 is medium, while a score above 3.67 is

considered as high (Nik, Jantan, & Taib, 2010; Sassenberg, Matchke, & Scholl, 2011).

Table 4.9 indicates that the number of cases or observations is 348. The mean and standard deviation of ECO is 5.7 and 0.94 respectively which indicates that the respondents moderately agree with the statements pertaining to this construct. Equally, the mean and standard deviation for know-what is 5.9 and 0.99 respectively. Similarly, know-how has a mean score of 5.8 and a standard deviation of 1.0. Also, know-who has a mean of 5.7 and a standard deviation of 1.0. Furthermore, the mean and standard deviation of know-when is 5.6 and 0.97 respectively. Finally, creativity has a mean value of 5.6 and standard deviation of 0.91 indicating that the respondents moderately agree with the statements as shown in Table 4.9 below. In line with the classification above, all the constructs have a standard deviation of between 5.5 and 5.9, indicating a high response score.

Table 4.9
Descriptive statistics of Constructs (Mean and Standard Deviation)

Construct	n	Mean	Std. Deviation
Entrepreneurial career option	348	5.7	0.94
Know-what	348	5.9	0.99
Know-how	348	5.8	1.0
Know-who	348	5.7	1.0
Know-why	348	5.5	1.0
Know-when	348	5.6	0.97
Creativity	348	5.6	0.91

4.4 PLS Path Modelling

In this portion of the study, factor analysis is presented. The study conducted an assessment of the validity and reliability of the measures or constructs using PLS-SEM modelling. The PLS-SEM path model consists of two elements. These are the measurement model (also called the outer model in the PLS-SEM) and structural model (also known as the inner model in the PLS-SEM) (Hair et al., 2014; Henseler et al., 2009). Specifically, the measurement model or outer model refers to the components of the path model which comprise indicators and their relationships with their respective latent constructs.

In factor analysis, the outer models refer to the unidimensionality of the variables studied. The outer or structural model is the component of the PLS-SEM path modelling which consists of the latent variables and the connection between them. Thereafter, the structural model was assessed and the relationship between latent variables established, after ascertaining the validity and reliability of the constructs. Consequent upon screening and checking the data, the next procedure was to evaluate the inner and outer models (Hair Jr et al., 2013). The study used PLS-SEM version 3.2.7 to evaluate the measurement model and the structural model. That is, the direct and mediating relationships of the study. In this regard, SmartPLS 3.2.7 was used to establish the association of the constructs in the models (Ringle et al., 2014).

As a prerequisite to the conduct of PLS-SEM analysis, the models need to be configured in a way to aid clearer understanding. In the process, indicators should be

clearly distinguished as to which are formative and which are reflective. This was necessary because the approach in testing formative variables differs significantly from the procedure in measuring reflective variables (Hair Jr et al., 2013; Lowry & Gaskin, 2014). In this study, the concern is with reflective models only. A reflective measurement model is one in which the direction of arrows from the latent variable points to the assigned indicators, suggesting the supposition that the latent variable causes the measurement of the items or indicator variables.

Therefore, the relationship among the study variables and their sequence consists of five independent variables; know-what (KWT), know-how (KHW), know-who (KWO), know-why (KWY), and know-when (KWN), creativity (CRT) serves as the mediating variable and entrepreneurial career option (ECO) is the dependent variable. Figure 4.1 depicted the procedure used in SmartPLS-SEM path modelling used in this study (Hair, Hult, Ringle, & Sarstedt, 2014; Klarner, Sarstedt, Hoeck, & Ringle, 2013).
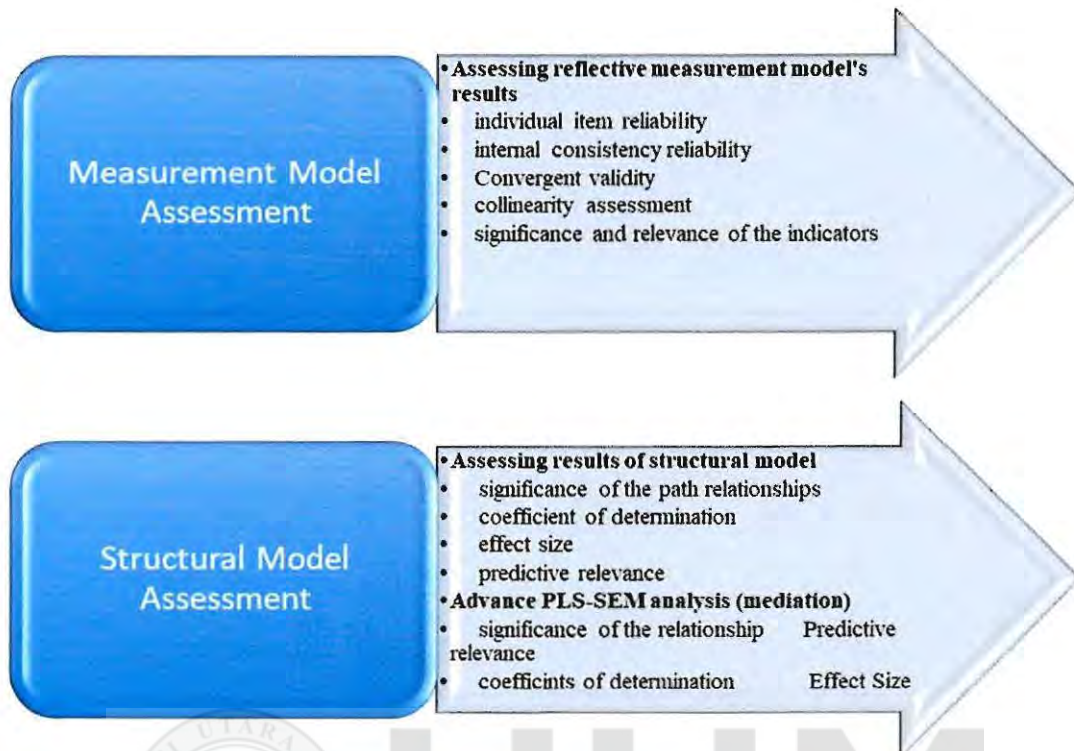
Figure 4.1
PLS –SEM Path Assessment Procedure

4.4.1 Measurement Model Assessment

The evaluation of the measurement model (outer model) is an initial step in analysis using PLS-SEM modelling procedure. The measurement model is an assessment of the components, and it measures how good the items (measures) load theoretically and how they associate with one another. This means that the outer model analysis assures that constructs are actually measured by the ideas designed to measure confirming that the items are valid and are reliable measures. Figure 4.2 (appendix E) shows the measurement model of the study.

4.4.1.1 Measurement of Reliability and Validity

Assessment of validity and reliability are the main criteria used in PLS-SEM to assess outer model (Hair et al 2013; Hulland, 1999; Ramayah, Lee, & In, 2011). The validity and reliability of measures determine conclusions about relationship among variables. Outer model suitability can be assessed through a look at: 1) reliability of individual items (indicator reliability and internal consistency reliability using composite reliability); 2) convergent validity of measures associated with individual construct using average variance extracted (AVE); and 3) using Fornell-Larcker to assess discriminant validity and indicator outer loadings. Table 4.10 shows the validity and reliability of measures used in this study.

Table 4.10
Construct Reliability and Validity

Constructs	Items	Loadings	Average Variance Extracted (AVE)	Cronbach's Alpha (CA)	Composite Reliability (CR)
Creativity	CRT1	0.787	0.618	0.966	0.968
	CRT10	0.808			
	CRT11	0.750			
	CRT12	0.777			
	CRT15	0.817			
	CRT16	0.763			
	CRT2	0.824			
	CRT20	0.780			
	CRT24	0.773			
	CRT25	0.778			
	CRT26	0.767			
	CRT27	0.773			
	CRT3	0.772			
	CRT4	0.830			
	CRT5	0.780			
	CRT6	0.779			
	CRT7	0.779			

	CRT8	0.813			
	CRT9	0.779			
Entrepreneurial career option	ECO1	0.668	**0.505**	**0.948**	**0.953**
	ECO10	0.684			
	ECO11	0.680			
	ECO13	0.696			
	ECO15	0.706			
	ECO16	0.741			
	ECO17	0.738			
	ECO19	0.710			
	ECO2	0.682			
	ECO20	0.744			
	ECO21	0.715			
	ECO22	0.762			
	ECO23	0.802			
	ECO24	0.756			
	ECO25	0.649			
	ECO27	0.683			
	ECO28	0.699			
	ECO3	0.628			
	ECO5	0.675			
	ECO6	0.765			
Know-how	KHW1	0.833	**0.649**	**0.865**	**0.902**
	KHW2	0.766			
	KHW3	0.832			
	KHW4	0.794			
	KHW5	0.802			
Know-when	KWN1	0.799	**0.582**	**0.821**	**0.874**
	KWN2	0.799			
	KWN3	0.762			
	KWN4	0.675			
	KWN5	0.773			
Know-who	KWO1	0.771	**0.562**	**0.845**	**0.885**
	KWO2	0.767			
	KWO3	0.764			
	KWO4	0.685			
	KWO5	0.783			
	KWO6	0.723			
Know-what	KWT1	0.847	**0.678**	**0.881**	**0.913**

	KWT2	0.820			
	KWT3	0.835			
	KWT4	0.837			
	KWT5	0.779			
Know-why	KWY1	0.766	**0.533**	**0.780**	**0.850**
	KWY2	0.642			
	KWY3	0.761			
	KWY4	0.758			
	KWY6	0.715			

*ECO=entrepreneurial career option, KWT=know-what, KHW=know-how, KWO=know-who, KWY=know-why, KWN=Know-when, CRT=creativity

4.4.1.2 Internal Consistency Reliability

Consistency of results of items of the same test is measured by internal consistency. Internal consistency measures the extent to which items meant to measure the same construct are generating similar scores (Hair et al., 2013). In this study, composite reliability is used to evaluate internal consistency reliability. Composite reliability (CR) does not take up equal loading of indicator construct, like the Cronbach's alpha (Hair et al., 2013). CR fluctuates in between 0 and 1, but a value of above 0.60 is desired (Henseler, Ringle, & Sinkovics, 2009), while a value of 0.70 is most desired (Hair et al., 2012). Hence, CR value ranging from 0.60 to 0.70 signifies average internal consistency, and 0.70 to 0.90 is regarded as most suitable (Nunnally & Bemstein, 1994). This study examined the Cronbach's alpha and composite reliability values for all the constructs and the result in Table 4.10 shows that both Cronbach's alpha and CR values for all the constructs were above the benchmark value of 0.70 as suggested (Hair et al., 2013; Henseler et al., 2009). In this study, the CR values lie between 0.850 and 0.968 respectively.

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4.4.1.3 Convergent Validity of Models

Convergent validity of the constructs refers to the extent to which measures of the same construct which relates to each other theoretically are related (Hair et al., 2013). Convergence is established through average variance extracted (AVE) with an inception of 0.50 and above (Hair et al., 2012; Henseler et al., 2009). Essentially, an AVE value of 0.50 is said to be a satisfactory convergent validity (Hair et al., 2013). This means that the latent constructs explain half of the variance of its indicators and signify that convergent validity was satisfactory (Hair et al., 2013). Consequently, in this study, AVE value was used to evaluate the convergent validity of the constructs. Table 4.10 below shows that all the constructs have an AVE value above the benchmark of 0.50 (Hair et al., 2012; Henseler et al., 2009). The study reports AVE values ranging from 0.505 and 0.678 for all construct, as such convergent validity confirmed.

4.4.1.4 Discriminant Validity

Discriminant validity is a measure of the extent to which a construct differs from another construct. This means that, the measures of constructs that are theoretically unrelated are in principle not related to each other in practice (Churchill, 1979; Hair Jr et al., 2013). The Fornell-Larcker criterion is the most conventional measure of evaluating discriminant validity (Hair Jr et al., 2013). Though, another approach is cross-loading that is more generous because many constructs may show discriminant validity.

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Discriminant validity is confirmed where the square root value of AVE of each construct is higher than the construct's highest correlation with other latent constructs (Hair Jr et al., 2013; Henseler et al., 2009). Hence, in this study, discriminant validity is assessed by comparing square root value of AVE for each construct with the values shown on the correlation matrix. Table 4.11 presents the Fornell-Larcker evaluation criterion and the constructs' square roots. The bold figures are the square root of the AVE which is greater than the construct's highest correlation with other constructs. Table 4.11 proves that there is no discriminant validity among all the constructs of this study using Fornell-Larcker criteria as all square roots (bolded values) are higher than corresponding values (Fornell & Larcker, 1981) Therefore, the discriminant validity on the construct was affirmed (Hair Jr et al., 2013; Henseler et al., 2009).

Table 4.11
Fornell-Larcker Criterion

Constructs	1	2	3	4	5	6	7
Creativity	**0.786**						
Entrepreneurial Career Option	0.674	**0.780**					
Know-how	0.734	0.673	**0.806**				
Know-what	0.778	0.723	0.805	**0.824**			
Know-when	0.679	0.550	0.678	0.648	**0.763**		
Know-who	0.753	0.606	0.754	0.719	0.653	**0.780**	
Know-why	0.570	0.456	0.490	0.464	0.512	0.531	**0.730**

Note: Bold values represent the square root of average variance extracted

Similarly, indicator outer loading can be used to assess discriminant validity. It was argued that discriminant validity can be affirmed when indicator outer loading of a construct is higher than all its cross-loadings with other constructs (Hair Jr et al.,

2013). As such, Table 4.12 below shows that discriminant validity problem is not present and all indicators have loadings of 0.50 and above.

Table 4.12
Factor Loadings and Cross-Loadings

Construct	Items	Creativity	Entrepreneurial Career Option	Know-how	Know-when	Know-who	Know-what	Know-why
Creativity	CRT1	0.787	0.561	0.607	0.531	0.581	0.547	0.478
	CRT10	0.808	0.484	0.545	0.507	0.520	0.563	0.398
	CRT11	0.750	0.494	0.539	0.477	0.596	0.593	0.430
	CRT12	0.777	0.532	0.570	0.565	0.585	0.609	0.488
	CRT15	0.817	0.500	0.564	0.539	0.541	0.574	0.410
	CRT16	0.763	0.482	0.563	0.493	0.550	0.521	0.383
	CRT2	0.824	0.597	0.619	0.611	0.609	0.512	0.486
	CRT20	0.780	0.524	0.568	0.493	0.628	0.618	0.457
	CRT24	0.773	0.558	0.583	0.565	0.559	0.577	0.433
	CRT25	0.778	0.537	0.562	0.565	0.589	0.611	0.484
	CRT26	0.767	0.543	0.583	0.512	0.547	0.620	0.492
	CRT27	0.773	0.500	0.553	0.495	0.525	0.563	0.388
	CRT3	0.772	0.508	0.594	0.518	0.582	0.550	0.418
	CRT4	0.830	0.507	0.570	0.537	0.547	0.586	0.410
	CRT5	0.780	0.527	0.572	0.496	0.626	0.618	0.460
	CRT6	0.779	0.536	0.568	0.569	0.589	0.612	0.493
	CRT7	0.779	0.549	0.587	0.525	0.558	0.631	0.496
	CRT8	0.813	0.589	0.606	0.598	0.597	0.508	0.467
	CRT9	0.779	0.505	0.586	0.516	0.577	0.546	0.406
Entrepreneurial career option	ECO1	0.499	0.668	0.479	0.403	0.422	0.543	0.336
	ECO10	0.516	0.684	0.499	0.421	0.447	0.562	0.354
	ECO11	0.480	0.680	0.514	0.457	0.472	0.513	0.361
	ECO13	0.421	0.696	0.439	0.368	0.437	0.497	0.362
	ECO15	0.456	0.706	0.478	0.374	0.430	0.504	0.276
	ECO16	0.525	0.741	0.477	0.389	0.445	0.546	0.348
	ECO17	0.479	0.738	0.471	0.430	0.409	0.514	0.305
	ECO19	0.447	0.710	0.450	0.316	0.384	0.454	0.269
	ECO2	0.442	0.682	0.464	0.358	0.411	0.486	0.267
	ECO20	0.486	0.744	0.453	0.332	0.397	0.495	0.282
	ECO21	0.429	0.715	0.465	0.383	0.386	0.470	0.293
	ECO22	0.565	0.762	0.516	0.411	0.485	0.584	0.382
	ECO23	0.575	0.802	0.575	0.503	0.504	0.614	0.395
	ECO24	0.466	0.756	0.495	0.413	0.435	0.502	0.318
	ECO25	0.418	0.649	0.425	0.381	0.353	0.452	0.311

	ECO27	0.491	0.683	0.511	0.456	0.477	0.535	0.379
	ECO28	0.445	0.699	0.459	0.364	0.453	0.519	0.386
	ECO3	0.421	0.628	0.446	0.327	0.400	0.456	0.251
	ECO5	0.438	0.675	0.427	0.300	0.384	0.425	0.273
	ECO6	0.520	0.765	0.485	0.370	0.438	0.538	0.277
Know-how	KHW1	0.611	0.607	0.833	0.549	0.628	0.589	0.368
	KHW2	0.505	0.485	0.766	0.531	0.575	0.600	0.392
	KHW3	0.616	0.536	0.832	0.637	0.631	0.570	0.437
	KHW4	0.561	0.499	0.794	0.481	0.571	0.632	0.381
	KHW5	0.547	0.573	0.802	0.532	0.627	0.548	0.398
Know-when	KWN1	0.546	0.529	0.578	0.799	0.547	0.543	0.433
	KWN2	0.528	0.407	0.489	0.799	0.461	0.521	0.400
	KWN3	0.451	0.379	0.452	0.762	0.461	0.408	0.409
	KWN4	0.391	0.391	0.421	0.675	0.396	0.388	0.321
	KWN5	0.524	0.360	0.493	0.773	0.478	0.456	0.377
Know-who	KWO1	0.612	0.506	0.621	0.502	0.771	0.627	0.450
	KWO2	0.507	0.382	0.566	0.484	0.767	0.485	0.405
	KWO3	0.528	0.434	0.594	0.492	0.764	0.490	0.407
	KWO4	0.472	0.382	0.494	0.426	0.685	0.452	0.355
	KWO5	0.562	0.548	0.592	0.547	0.783	0.620	0.424
	KWO6	0.567	0.437	0.513	0.473	0.723	0.519	0.339
Know-what	KWT1	0.563	0.601	0.561	0.504	0.616	0.847	0.388
	KWT2	0.543	0.562	0.580	0.512	0.603	0.820	0.384
	KWT3	0.556	0.593	0.554	0.554	0.624	0.835	0.429
	KWT4	0.552	0.555	0.590	0.542	0.591	0.837	0.353
	KWT5	0.586	0.562	0.632	0.559	0.522	0.779	0.356
Know-why	KWY1	0.441	0.351	0.388	0.376	0.467	0.377	0.766
	KWY2	0.301	0.266	0.256	0.250	0.320	0.213	0.642
	KWY3	0.411	0.350	0.335	0.371	0.361	0.298	0.761
	KWY4	0.443	0.334	0.370	0.452	0.359	0.345	0.758
	KWY6	0.460	0.349	0.414	0.392	0.418	0.427	0.715

The result of the examination of measurement model (outer model) shows evidence of validity and reliability of measures. Further step is to assess the structural model (inner model). Note that, the initial model based on the content of literature needs to be amended because 18 out of the 83 items were deleted. But, all the constructs maintained fulfil the requirement of having sufficient indicators (Hair, Sarstedt, Pieper, & Ringle, 2012).

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4.4.2 Assessment of Structural Model

In this section, the SEM model of the data analysis was presented. Both the direct and mediating hypotheses were examined using bootstrap analysis. Precisely, standard bootstrapping procedure was engaged using 5000 bootstrap samples for 348 cases to examine the impact of the path coefficients of the direct and mediating hypotheses (Hair *et al.*, 2014; Hair *et al.*, 2011; Hair *et al.*, 2012; Henseler *et al.*, 2009). Nonetheless, the objectives of the current study are to empirically assess the direct association between independent variables (IVs) and the dependent variable (DV), as well as the mediating impact CRT between those IVs and the DV. The key criteria for evaluating the structural model in PLS-SEM are examination of the significance of path coefficients, determination of coefficients (R^2), effect size (f^2), and predictive relevance (Q^2).

4.4.2.1 Measurement of Direct Relationship

An analysis of the structural model of the study was conducted to provide a detailed description of the results and test of hypothesis. The assessment of the inner model begins by evaluating the direct relationship between the independent and the dependent variable. Path coefficients were determined through PLS-SEM algorithm, and PLS-SEM bootstrapping procedure was used to determine the significance of the relationship. Consequently, bootstrapping procedure was carried with 348 cases and 5000 samples (Hair, Ringle, & Sarstedt, 2011; Hair et al., 2012; Hair Jr et al., 2013; Henseler et al., 2009).

The direct relationship between the latent and indicator variables was designed to provide answers to hypotheses H1 to H11. In this model, direct relationship between the independent and mediating variables with the dependent variable was conducted to examine the association between the indicator and latent (H1 to H11). Simultaneously, the model assesses the association between indicator and latent variables through a mediator using bootstrapping procedure. Figure 4.3 shows the study structural model.
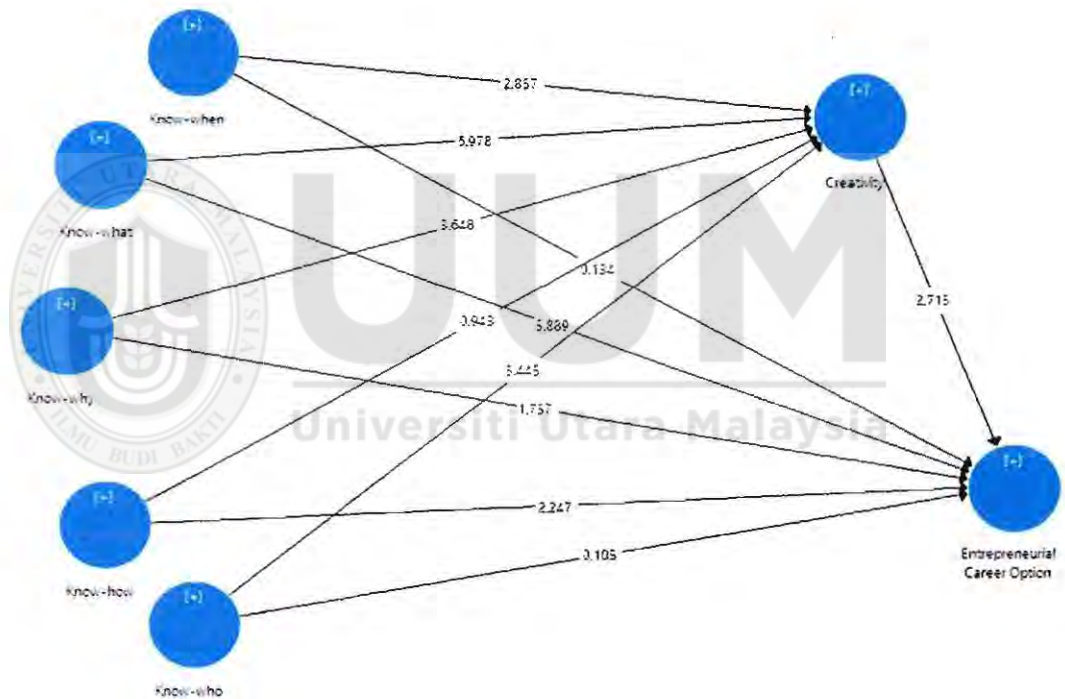
Figure 4.3
PLS-SEM Bootstrapping
Note: The [+] sign indicate factor loading but hidden for the purpose of good appearance of the diagram.

The results of the PLS-ESM algorithm and bootstrapping procedure, the path coefficients of independent and dependent variable are shown in Figure 4.3. Results

indicate a favourable coefficient of exogenous variables with endogenous variable. The bootstrapping result on Figure 4.3 indicates that the relationship between the independent variables and the dependent variables showed that four variables (H4, H5, H8, & H10) are significant at $p<0.01$; three (H1, H3, & H6) are significant at $p<0.05$; while one hypothesis (H11) is significant at $p<0.1$.

With respect to H1, result indicates a positive relationship between KWT and ECO ($\beta.0.393$; $t=5.889$; $p<0.001$); hence H1 is supported. Also, the result of the relationship between KHW and ECO (H2) shows a significant influence ($\beta.0.170$; $t=2.247$; $p<.05$), as such it is supported. Similarly, H4 shows a positive significant association between KWY and ECO ($\beta. 0.073$; $t=1.757$; $p<0.05$), indicating that there is significant positive relationship between the variables as such supported. Still on the direct relationships, H6 assesses the relationship between CRT and ECO, and established a significant positive effect ($\beta.0.191$; $t=2.715$; $p<.05$), therefore, H6 is supported. Further on the direct relationships, H7 assesses the association between KWT and CRT, and established a significant positive relationship ($\beta.0.377$; $t=6.978$; $p<.0.01$) therefore, H7 is also supported. In the case of H8, the relationship between KHW and CRT shows no significant influence ($\beta.0.061$; $t=0.943$; $p<0.05$), therefore not supported. Similarly, H9 assesses the relationship between KWO and ECO, the result shows a positive influence of KWO on CRT ($\beta.0.153$; $t=3.648$; $p<0.01$). In the case of H10, the relationship between KWY and CRT shows a significant influence ($\beta.0.153$; $t=3.648$; $p<0.01$), therefore H10 is supported. Last on the direct relationship, H11 assesses the association between KWN and CRT, and established a

significant positive relationship (β.0.146; t=2.857; p<.0.01) therefore, H11 is also supported.

However, hypotheses H3, H5, and H8 assessing the relationship between KWO and ECO, KWN and ECO, and KHW and CRT respectively show no positive influence between the variables. Thus, hypotheses H3, H5, and H8 were not supported. Table 4.13 indicates the direct relationship between the constructs.

Table 4.13
Test of Significance for Direct Relationships

Hypotheses	Relationship	Beta Value	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
H1	Know-what-> Entrepreneurial Career Option	0.393	0.067	5.889	0.000	Supported
H2	Know-how -> Entrepreneurial Career Option	0.17	0.075	2.247	0.025	Supported
H3	Know-how -> Entrepreneurial Career Option	0.008	0.075	0.105	0.916	Not Supported
H4	Know-why-> Entrepreneurial Career Option	0.073	0.042	1.757	0.079	Supported
H5	Know-when->Entrepreneurial Career Option	0.008	0.058	0.134	0.894	Not Supported
H6	Creativity->Entrepreneurial Career Option	0.191	0.07	2.715	0.007	Supported
H7	Know-what->Creativity	0.377	0.054	6.978	0.000	Supported
H8	Know-how->Creativity	0.061	0.064	0.943	0.346	Not Supported

H9	Know-who->Creativity	0.260	0.048	5.445	0.000	Supported
H10	Know-why -> Creativity	0.153	0.042	3.648	0.000	Supported
H11	Know-when->Creativity	0.146	0.051	2.857	0.004	Supported

4.4.2.2 Test of Mediation

In the second model, mediation analysis is conducted where the mediator variable is presented. Table 4.14 shows the path coefficients of four independent variables showing positive outcome as evidenced by significant positive path coefficient values. However, the path coefficient of mediation between one independent and the dependent variables had insignificant value. Also, the path coefficient between the mediator and the dependent variable shows a positive value. Table 4.14 shows that the bootstrapping results are significant and there are no negative values among the path coefficients.

Essentially, mediation analysis evaluates the indirect effect of the independent variable on the dependent variable through the medium of an intervening variable. Scholars such as Preacher and Hayes (2008) posit that techniques for evaluating mediation are many. These include casual step strategy or serial approach (Hoyle & Robinson, 2004); which also refer to the conditions of Baron and Kenney (1986); Sobel test or product of coefficients method (Sobel, 1982); distribution of the product approach (MacKinnon, Fairchild, & Fritz, 2007; MacKinnon, Fritz, Williams, & Lockwood, 2007; MacKinnon, Lockwood, & Williams, 2004); and bootstrapping method (Hayes, 2009; Preacher & Hayes, 2004). Recently, bootstrapping is the most

widely used approach in mediating analysis, where an empirical representation of the distribution of the indirect effect is generated via a bootstrapping procedure (Hayes, 2009; Rucker, Preacher, Tomala, & Petty, 2011).

Hypotheses of the study were analysed based on the mediation criteria suggested by Baron and Kenny (1986) and Preacher and Hayes (2004; 2008). Also, some specific suggestions of PLS-SEM mediation analysis by Hair Jr et al. (2013) were also used. Mediation, according to Baron and Kenney (1986) exists when certain conditions are met. The first condition is defining the total effect (X-Y) relationship between independent and dependent variable. But, it is not always necessary for the total effect to be significant. Mediation can occur even when total effect is absent and there is a significant indirect effect (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Rucker et al., 2011; Zhao, Lynch, & Chen, 2010). Secondly, there is existence of significant effect of the relations; that is the effect of independent on the dependent variable via the mediating variable (Preacher & Hayes, 2008). This means that the independent variable's effect on the mediator and the effect of the mediating variable on the dependent variable (*a* and *b*) needs to be significant. Hence, if any of the indirect effects through mediator variable is not significant, then the mediator variable cannot intervene on the relationship between the independent variable and the dependent variable (Preacher & Hayes, 2008). Lastly, the direct effect of the independent variable on the dependent variable should be insignificant or smaller than the relationship prior to the inclusion of a mediating variable (C).

The estimation of the path model of a direct relationship of the independent variable on the dependent variable is the starting point of bootstrapping procedure. Using PLS-SEM algorithm and bootstrapping, the path models are the path coefficients and t-values (Hair Jr et al., 2013). The emphasis is on whether the relationship of independent and mediator variable, and that of the mediator and dependent variable are significant. This condition needs to be necessarily satisfied but not sufficient to establish mediation effect. Finally, the product of the two significant path coefficients is divided by the standard error of the product ($\frac{(axb)}{sab}$) to examine the significance of the indirect effect.

The advantages and justifications of using bootstrapping procedure to test mediation have been highlighted by several studies, including; Hair Jr et al. (2013); Hayes and Preacher (2010); Hayes (2012); Preacher and Hayes (2008); and Zhao et al. (2010). For example, Hayes and Preacher (2010) argue that the use of standard errors wasnot made in Baron and Kenny's (1986) four conditions of mediation. Similarly, Sobel test assumes a normal sample distribution of the indirect effect, whereas Preacher and Hayes (2007) suggest that there is asymmetrical relationship between independent variable's effect on the mediator and the mediator variable's effect on the dependent variable. Also, Hayes (2009) argue that the distribution of the product strategy is demanding and requires the support of tables and must satisfy some assumptions of normal sampling distribution.

According to Shrout and Bolger (2002), the above mentioned flaws can be avoided by bootstrapping method which tests the indirect effect empirically. In addition, Zhao

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et al. (2010) maintained that bootstrapping method solves the aforementioned problems by generating empirical sampling distribution (a x b). Further, Lockwood and MacKinnon (1998) posit that interval estimate of a population is provided by bootstrapping method which cannot be obtained using other tests of mediation. Furthermore, it was concluded that bootstrapping method does not require any assumption about the sampling distribution of the indirect effect or the product of indirect effect (Hayes & Preacher, 2010; Preacher & Hayes, 2008). This means that in bootstrapping method, the confidence interval can be asymmetrical rather than at regular confidence intervals in other methods. This is because they are based on empirical estimation of the sampling distribution of the indirect effects instead of assuming normal sampling distribution in other methods.

Understanding the relative advantage of the bootstrapping method, Hair et al. (2013) and Hayes and Preacher (2010) recommended using bootstrapping method to test the significance of mediation. Therefore, this study tested the mediating effect of creativity on KWT, KHW, KWO, KWY, and KWN on ECO with SmartPLS 3.2.7 using the bootstrapping procedure with 348 cases and 5000 sub-samples. Figure 4.2 shows the PLS-SEM algorithm with direct link of independent variables to dependent variable and figure 4.3 shows the PLS-SEM bootstrapping result of the relationship between the independent and dependent variable through CRT as a mediator.

In the model, creativity is the mediator variable and bootstrapping result of 5000 samples was used to multiply path *a* and path *b*, then, the product of the two

significant paths was divided by the standard error of the product of the two paths $(\frac{(axb)}{sab})$ to get the t-value. Therefore, it is clear from table 4.13 that creativity mediates the positive relationship between KWT and ECO (β=0.072; t=2.526; p<0.05); KWN and ECO (β=0.049; T=1.967; P<0.05); KWY and ECO (β=0.029; t=2.099; P<0.05). However, CRT did not mediate relationship between KHW and ECO, Hence, hypotheses H13 was not supported. Table 4.14 shows the result of mediation relationships.

Table 4.14
Test of Indirect Relationships

Construct	Beta Value (β)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ($|O/STDEV|$)	P Values	Decision
Know-how -> Creativity -> Entrepreneurial Career Option	0.012	0.012	0.014	0.831	0.406	Not supported
Know-what -> Creativity -> Entrepreneurial Career Option	0.072	0.073	0.029	2.526	0.012	Supported
Know-when -> Creativity -> Entrepreneurial Career Option	0.028	0.028	0.014	1.967	0.049	Supported
Know-who -> Creativity -> Entrepreneurial Career Option	0.050	0.051	0.021	2.319	0.020	Supported
Know-why -> Creativity -> Entrepreneurial Career Option	0.029	0.030	0.014	2.099	0.036	Supported

4.4.2.3 Coefficient of Determination (R^2)

Coefficient of determination (R^2) of endogenous latent variables is one of the most frequently used measures of evaluating structural model (Hair Jr et al., 2013; Hair et

al., 2011; Hair et al., 2012; Henseler et al., 2009). R-square measures the predictive accuracy of a model is calculated as the squared correlation between the endogenous constructs' actual and predicted value (Hair et al., 2014). R^2 value is the combined effects of exogenous latent variables on latent endogenous variable (Hair et al., 2010; Hair et al., 2006; Hair et al., 2014). Scholars differ on the amount of R^2 that is within an acceptable threshold. R^2 values are classified as .27, substantial; .13, moderate; and .02, weak (Cohen, 1988). Others argued that R^2 values of 0.75; 0.50; and 0.25 can be considered as substantial, moderate and weak respectively (Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). However, the likes of Chin (1998) suggests that R^2 values of 0.67, 0.33, and 0.19 can be considered as substantial, moderate, and weak respectively in PLS modelling. In this study, the R^2 values for ECO and CRT were 0.570 and 0.719 respectively. Table 4.15 below shows that the R2 of the exogenous construct are substantial, therefore, the model has a good predictive relevance.

Table 4.15
Coefficient of Determination for Direct Relationship

Construct	R-Square Value (R^2)
Entrepreneurial Career Option	0.570
Creativity	0.719

4.4.2.4 Effect Size (f^2) Assessment

In addition to R^2 assessment of the model's endogenous construct, an assessment of the R^2 when a particular exogenous variable is excluded from the model is used to evaluate the extent to which an omitted variable has an effect on the endogenous latent variable. This measure is known as effect size (Hair et al., 2014). Effect size is

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a measure of relative effect of specific latent exogenous variable on endogenous

latent variable based on changes in the R^2 value resulting from the exclusion of the

latent exogenous variable (Chin, 1998). The effect size is measured using Cohen's

formula (Cohen, 1988; Hair et al., 2014; Selya, Rose; Dierker, Hedeker, &

Mermelstein, 2012) provided as:

$$f^2 = \frac{R^2\ Included - R^2\ Excluded}{1 - R^2\ Included}$$

Where:-

F^2 is the value of f^2 that predicts the effect size of an exogenous variable on

endogenous variable. R^2 included in the R^2 value of endogenous variable before a

particular construct is omitted. And R^2 excluded describes the changes in the R^2

value of endogenous variable after excluding a specific endogenous variable from a

particular model. In line with above formula, the $f2$ values of 0.02, 0.15, and 0.35,

signify low, medium, and high effects respectively (Cohen, 1988). However, Chin,

Marcolin, & Newsted (2003) argued that even the least effect of f2 ought to be

considered because it can have effect on the latent endogenous variable. Based on

this, the effect size for this model is calculated as presented in Table 4.16:

Table 4.16
Effect size (f^2)

Constructs	Effect Size (f^2)	Effect
CRT->ECO	0.024	Small
ECO->KHW	0.018	Small
ECO->KWT	0.097	Small
ECO ->KWN	0.000	None
ECO->KWO	0.000	None
ECO->KWY	0.008	None
CRT->KHW	0.004	None
CRT->KWT	0.159	Medium
CRT->KWN	0.035	Small
CRT->KWO	0.086	Small

CRT->KWY	0.056	Small

4.4.2.5 Assessment of Predictive Relevance (Q^2)

Researchers suggested that Stone-Geisser's Q^2 value should be used to evaluate R-square as a measure of predictive accuracy (Geisser, 1974; Stone, 1974). This criterion is an indicator of predictive relevance of model (Hair et al., 2014). This can however, be considered as a complementary assessment of the fit in the PLS-SEM analysis (Duarte & Roposo, 2010; Stone, 1974), and therefore, the Q^2 indicates how well the observed values that formed the model as well as its parameter estimates (Chin, 1998).

In this study, however, cross-validated redundancy criterion was used to examine the predictive relevance (Q^2) of exogenous constructs on the endogenous latent variable (Geisser, 1974; Hair et al., 2013; Hair et al., 2014; Ringle et al., 2012; Stone, 1974). Consequently, a model with the Q^2 greater than zero is assumed to have predictive relevance (Duarte & Roposo, 2010). Figure 4.4 below presents the Q^2 value obtained using the blindfolding procedure in this study.
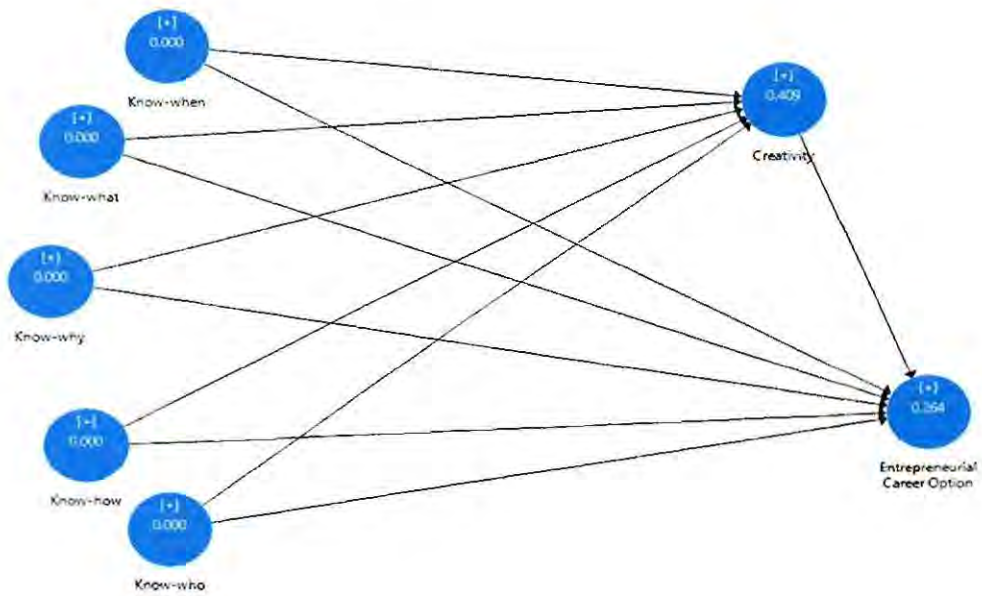
Figure 4.4
Predictive Relevance Model (Q²)

Table 4.17
Predictive relevance (Q²)

Total	SSO	SSE	Q² (=1-SSE/SSO)
Creativity	6,612.000	3,905.484	0.409
Entrepreneurial Career Option	6,960.000	5,122.005	0.264

Table 4.17 presents the blindfolding result of the cross-validated redundancies of the endogenous latent variables of the direct relationship model of this study. Since the cross-validated redundancies are greater than zero, it indicates the presence of path model predictive relevance (Chin, 1998; Hair et al., 2014; Hayes, 2009).

4.4.2.6 Assessment of Goodness-of-Fit Index (GoF)

The global Goodness-of-Fit (GoF) index is a yet another significant measure of model valuation, though opinion differs on the effectiveness of GoF in confirming a

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model (Hair Jr et al., 2013; Henseler & Sarstedt, 2013). Essentially, the global GoF is the linear mean of the average communalities and scholars postulate that GoF can be engaged in PLS-SEM to equate performance created by the models (Tenenhaus, Amato, & Esposito Vinzi, 2004). However, scholars such as Hair Jr, Sarstedt, Hopkins, & Kuppelwieser (2014), Henseler and Sarstedt (2013), and Sarstedt et al. (2014) have argued against the existence of GoF in PLS-SEM modelling. Specifically, some scholars questioned the use of GoF in PLS-SEM because their simulation result indicated that it is not useful for confirming models but can describe how well the model can explain dissimilar data sets (Henseler & Sarstedt, 2013).

4.5 Control Variables

In addition to testing the association between the independent and dependent variables as envisaged in the structural model, two additional variables were assessed as control measures in the study. Employment experience and duration in entrepreneurship were included as control variables in the final model. Control variables are treated as exogenous latent variables similar to other exogenous variables in the model (Kock, Chatelain, & Carmona, 2008; Kock, 2011). Unlike other exogenous variables in the model, the attention of the study is not on the control variables. Control variables are integrated into the model to assess the extent to which exogenous variable accounts for any relationship with endogenous variable rather than any of the controlled variables. Hence, the significance or otherwise does not matter much (Kock, 2011). Control variables are included for expressed purpose

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of accounting for known or possible conpounding effect on any construct in the study model (Lowry & Gaskin, 2014).

In order to test the effects of control variables on the endogenous variable in the study, employment status and entrepreneurial experience were included in the model as independent variables and linked to entrepreneurial career option. The bootstrapping procedure was applied to see the relationship between the two constructs and ECO. The bootstrapping result in figure 4.5 indicates that both employment status and entrepreneurial experience do not have a significant positive relationship with entrepreneurial career option.
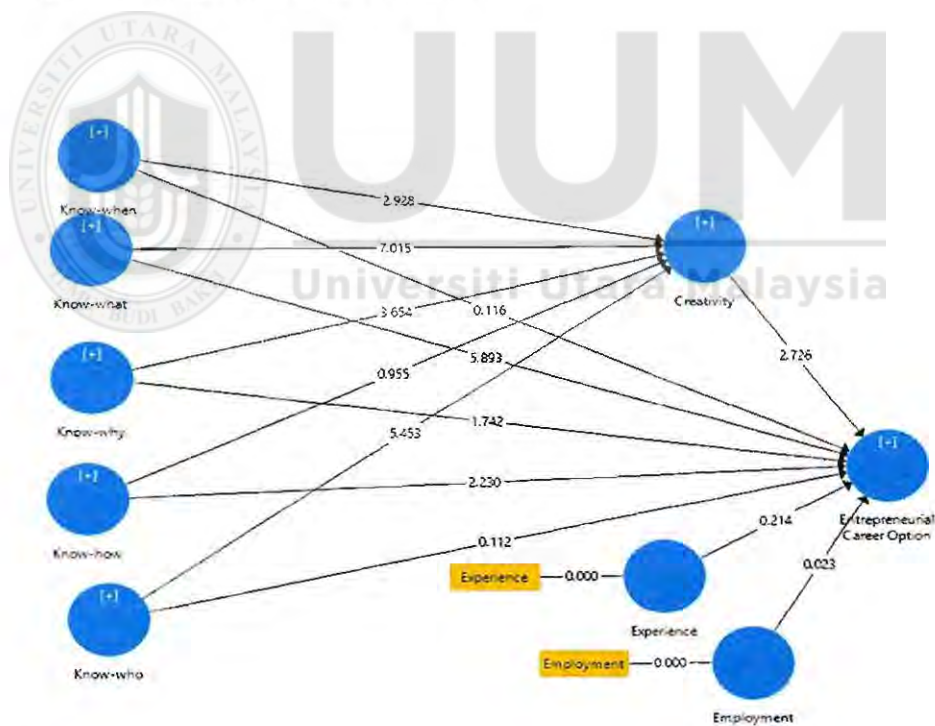
Figure 4.5
Bootstrapping Control Variables

Table 4.18
Control variables Path Coefficients

Constructs	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Employment -> Entrepreneurial Career Option	-0.001	0.000	0.040	0.023	0.982
Experience -> Entrepreneurial Career Option	-0.008	-0.007	0.040	0.214	0.831

Impliedly, previous employment experience is not a predictor of entrepreneurial career option among graduate students of polytechnics in north western Nigeria. Similarly, past entrepreneurial experience of students has no effect on ECO. In fact, the empirical result suggests that the higher the employment status and entrepreneurial experience, the lower the ECO.

4.6 Summary of the Study Findings

Based on the study objective stated inter-alia, the study findings were summarised as in tables 4.19, 4.20, and 4.21. Furthermore, a recapitulation of the study is presented on tables 4.19, 4.20, and 4.21.

Table 4.19
Recapitulation of the Study Findings (Direct Relationship)

Hypotheses	Statement of Hypotheses	Decision
H1	There is a significant relationship between know-what and entrepreneurial career option	Supported
H2	There is a significant relationship between know-how and entrepreneurial career option	Supported
H3	There is a significant relationship between know-who and entrepreneurial career option	Not Supported

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H4	There is a significant relationship between know-why and entrepreneurial career option	Supported
H5	There is a significant relationship between know-when and entrepreneurial career option	Not supported
H6	There is a significant relationship between creativity and entrepreneurial career option	Supported

Table 4.20
Direct Relationship (Independent and Mediating Variable)

Hypotheses	Statement of Hypothesis	Decision
H7	There is a significant relationship between know-what and creativity	Supported
H8	There is a significant relationship between know-how and creativity	Not Supported
H9	There is a significant relationship between know-who and creativity	Supported
H10	There is a significant relationship between know-why and creativity	Supported
H11	There is a significant relationship between know-when and creativity	Supported

Table 4.21
Mediating Relationship (Independent, Mediating, and Dependent Variables)

Hypotheses	Statement of hypothesis	Decision
H12	Creativity mediates the relationship between know-what and entrepreneurial career option	Supported
H13	Creativity mediates the relationship between know-how and entrepreneurial career option	Not supported
H14	Creativity mediates the relationship between know-who and entrepreneurial career option	Supported
H15	Creativity mediates the relationship between know-	Supported

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	why and entrepreneurial career option	
H16	Creativity mediates the relationship between know-when and entrepreneurial career option	Supported

4.7 Chapter Summary

In this chapter, statistical analysis of quantitative data collected through questionnaire distributed in polytechnics in Jigawa, Kaduna, Kano, Katsina, Kebbi, and Zamfara states were presented. The response rate tests and non-response bias test assessments were conducted. Thereafter, data was examined for screening and detection of missing values and outliers. This was preceded by test of normality and multicollinearity assessment. Accordingly, the sample features were presented, followed by an evaluation of the measurement model and the structural model using the SmartPLS 3.2.7 statistical package (Ringle et al., 2014). Subsequently, the hypotheses were tested and the outcomes reported accordingly.
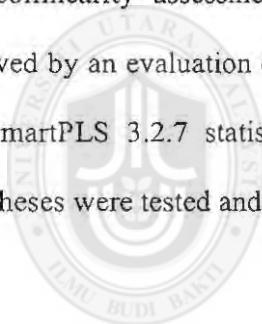
CHAPTER FIVE
CONCLUSION, SUMMARY, AND RECOMMENDATION

5.1 Introduction

The preceding chapter presents the results of analysis of data collected, and results of findings supporting the hypotheses with empirical proof. Hence, this chapter gives a summary of research findings based on the data analysed in the previous section. Secondly, it also summarises the part of the study that uses the research questions and research objectives as well as the underpinning theories and prior works of scholars. Thirdly, the methodological, theoretical, and practical implications of the study and entire body of knowledge were analysed and reported. Fourthly, the limitations of the study as well as recommendations offered for future directions of research based on the constraints. Lastly, the study derives a conclusion from the study findings.

5.2 Recapitulation of the Research Findings

The study provides an understanding of graduate unemployment problem among students of polytechnics in north-western Nigeria. The unwillingness of students to take to an entrepreneurial career after graduation is generating concern from the governments, education regulatory agencies, non-governmental organisations (NGOs), HEIs, parents, and the general public. Nigeria introduced and made EE courses a compulsory credit hour course and mandatory graduation requirement among students of HEIs beginning from 2007/2008 session. The main objective of these courses was to create awareness and stimulate students to take up an

entrepreneurial career after graduation. However, problems associated with a mismatch between the graduate's employable skills and requirements of the job market, the curriculum of instruction that originates from colonial administration becomes a problem. The present school curriculum is part of the legacies of colonial administration which was designed to produce clerks and other workers (white-collar jobs) for the imperial establishments. Also, lack of adequate qualified entrepreneurial lecturers, inadequate funding of the EE courses and lack of sufficient and up-to-date facilities, the inappropriate pedagogy of instruction of EE courses etc., are yet other shortcomings of the EE courses in Nigeria's HEIs.

The quantitative technique of data collection was adopted, which involved the use of structured questionnaires adapted from previous researchers. The data collection exercise was self-administered which enabled the researcher to contact the respondents face to face. The study distributed an entire set of 505 questionnaires to HND polytechnic students in Northwestern Nigeria with a total population of 6043. Out of the 505 of polls allocated, 425 were duly completed and returned. The study keyed the data into SPSS Version 23, and the analysis began by checking for missing values and outliers. 38 data points were found missing and replaced through serial mean method. Based on the univariate and multivariate detection methods, 77 questionnaires were found unusable and therefore deleted from the dataset. Hence, the retained 348 sets of questions for further analysis.

Likewise, a reliability test was conducted to determine the internal consistency of the measures through factor loadings, convergent validity, and discriminant validity. The

hypotheses of direct relationship and indirect relationships were tested using PLS-SEM bootstrapping with 348 cases and 500 samples. The result of PLS-SEM bootstrapping process of entrepreneurial career option indicated that twenty items measured the construct. All EE components; know-what, know-how, know-who, know-why, know-when, and creativity were measured as uni-dimensionally. Both constructs obtain reliability coefficients of more than 0.5 which is within the required benchmark.

The study developed 6 direct hypotheses to measure the direct relationship between the independent and dependent variales. Also, five direct hypotheses were developed to measure the direct relationships between the independent and the mediator variables. Similarly, five indirect hypotheses were developed to measure the indirect relationships between the independent and the dependent variables. These hypotheses provided answers to three (3) research questions and three research objectives (ref. chapter one). Precisely, the result of statistical path modelling using the SmartPLS 3.2.7 supported H1, H2, H4, H6, H7, H9, H10, H11, H12, H14, H15, and H16. However, hypotheses H3, H5, H8, and H13 were not supported based on the research questions and research objectives outlined in chapter one.

5.3 Discussion

This section of the study emphasised the 11 direct relationships and five indirect relationships hypothesised in chapter two. Hence, it provided answers to research questions in line with the research objectives outlined in chapter one (item 1.3). The section discusses the findings with regards to prior studies and underpinning theories.

After that, the study examined the research questions under different hypotheses developed for the study.

The objectives of research study as stated inter-alia were; to examine the relationships between components of entrepreneurship education and entrepreneurial career option among polytechnic students in Northwestern Nigeria; to examine the relationship between components of entrepreneurship education and creativity among polytechnic students in Northwestern Nigeria; and to examine the mediating effect of creativity on the relationship between components of entrepreneurship education and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

Therefore, six hypotheses were put forward to examine the positive relationship between KWT and ECO, KHW and ECO, KWO and ECO, KWY and ECO, and KWN and ECO, and CRT and ECO. Similarly, hypotheses H7 to H11 examined the positive relationship between the components of EE and the mediator variable. While, hypotheses H12 to H16 examined the mediating effect of CRT on the relationship between components of EE and ECO. As mentioned in the literature review, EE comprised of components such as KWT, KHW, KWO, KWY, and KWN. These components are used to impart essential competencies into students that are significant to entrepreneurship. Therefore, this study highlights the significance of all the elements of EE to achieve ECO among students. Precisely, this result tends to support that knowledge of the components of EE is fundamental to the success of entrepreneurship as an alternative career option for students in Northwestern Nigeria.

The hypotheses put forward to examine the direct relationship between the exogenous and endogenous variables as stated inter-alia were:

H1: There is a significant relationship between know-what and entrepreneurial career option among poplytechnic students in Northwestern Nigeria.

H2: There is a significant relationship between know-how and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

H3: There is a significat relationship between know-who and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

H4: There is a significant relationship between know-why and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

H5: There is a significant relationship between know-when and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

H6: There is a significant relationship between creativity and entrepreneurial career option among polytechnic students in Northwestern Nigeria.

Similarly, the study assessed the direct relationship between the mediator and the dependent variable and the indedependent variables with the mediator variable. Specifically the study examined the relationship as stated in the statement of hypotheses formulated in the previous sections of the study as followed:

H7: There is a significant relationship between know-what and creativity among polytechnic students in Northwestern Nigeria.

H8: There is a significant relationship between know-how and creativity among polytechnic students in Northwestern Nigeria.

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H9: There is a significant relationship between know-who and creativity among polytechnic students in Northwestern Nigeria.

H10: There is a significant relationship between know-why and creativity among polytechnic students in Northwestern Nigeria.

H11: There is a significant relationship between know-when and creativity among polytechnic students in Northwestern Nigeria.

5.3.1 The Relationship between Know-what and Entrepreneurial Career Option

The study evaluates the first hypothesis (H1), which states that KWT relates to entrepreneurial career option. In this context, KWT refers to theoretical knowledge of entrepreneurship. It is the all-encompassing knowledge of enterprise gained through classroom instructions. Theoretic understanding of entrepreneurship is an essential part of EE because all other facets of EE are subject to KWT component of knowledge (Fiet, 2001). In line with previous findings, the result found support for H1 that KWT is significantly related to entrepreneurial career option among students. The result corroborates previous studies that found positive association between KWT and entrepreneurial career option among students (Abuzhuri & Hashim, 2017; Asghar et al., 2016; Fayolle & Gailly, 2013; Hussain & Hashim, 2015; Isah & Hashim, 2017; Karimi et al., 2016; Miralles, Gione, & Riverola, 2015; Othman & Nasrudin, 2016; Middleton & Donellon, 2014; Yarima & Hashim, 2016; Yasin, Mahmoud & Jaafar, 2011).

Besides, improvements in ECO enables entrepreneurship development through knowledge and insights gained from EE in the classroom context. Hence, KWT is

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crucial to ECO by creating awareness about entrepreneurship as a legitimate career option to engage after graduation from HEIs. Therefore, polytechnics in Northwestern Nigeria should be proactive in imparting the necessary knowledge of enterprise into students to develop awareness and change their intention towards entrepreneurial career to become future employers of labour instead of employees. As the findings validate the hypothesis, it also provides answer to the research questions. Similarly, it supports the assertion of HCT as the theory of education by confirming the positive relationship between knowledge and career aspirations and wellbeing of individuals and societies.

5.3.2 The Relationship between Know-how and Entrepreneurial Career Option

The second hypothesis, hypothesis H2, which states that KHW is significantly related to entrepreneurial career option was also assessed to achieve the first study objective. Note that KHW component of EE refers to the technical skills of entrepreneurship. In this study, regression result shows that KHW is related to ECO. KHW concerns the technical and managerial skills learned through EE which includes financial, marketing, production, and planning skills. The findings in this study corroborates previous studies that reported positive connection between KHW and ECO (Asghar et al., 2016; Bae et al., 2014; Eesley & Wang, 2014; Hoang & Antoncic, 2003; Hoe et al., 2014; Huber et al., 2012; Isah & Hashim, 2017; Johansen, 2013; Jones et al., 2012; Lisi & Pugno, 2015; Maina, 2014; Muofhe & du Toit, 2011; Muhammad et al., 2013; Ngwoke, Oyeoku, Obikwelu, 2013; Ogbonna, 2015; Ogundele & Egunjimi, 2016; Othman & Nasrudin, 2016; Pruett, 2012; Sondari, 2014; Ulvenblad et al., 2013; Yarima & Hashim, 2016). Therefore, H2

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which states that KHW is significantly related to ECO is upheld, as well as provided an answer to the research question on the positive relationship between KHW and ECO among polytechnic students.

The study result corroborates the findings of Kolade (2018) that EE programmes in Nigeria create awareness and facilitate skills development. The study also provides theoretical support for HCT assumptions that investment in education, skills, and experiences are capital goods that improve the lives and wellbeing of individuals in a society.

5.3.3 The Relationship between Know-who and Entrepreneurial Career Option

The third hypothesis (H3) of the study which states that there is a significant relationship between KWO and ECO was analysed to achieve the study objective. Similarly, the first objective of the study was achieved by testing hypothesis. In the preceding chapter, KWO denotes to social networking skills; an ability to cooperate and communicate with stakeholders in the entrepreneurial sphere. Precisely, KWO refers to an ability to communicate and obtain information from experts, lecturers, entrepreneurial teachers, local businesspeople, and classmates that serve as mentors and role models. Prior researches have established a positive link between KWO and ECO (e.g., Aaltio & Wang, 2015; Abaho, 2013; Abuzhuri & Hashim, 2017a; Abuzhuri & Hashim, 2017b; Eesley & Wang, 2014; Fayolle & Gailly, 2013; Hussain & Hashim, 2015; Isah & Hashim, 2017; Lo, 2011; Martin-Sanchez e t al., 2018; Middleton & Donnelon, 2015; Muofhe & du Toit, 2011; Othman & Nasrudin, 2016; Rani, 2016; St-Jean & Mathieu, 2015).

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In this study, data analysis using PLS-SEM bootstrapping procedure indicates that KWO has no association with ECO; thus hypothesis H3 is not supported. The result is not surprising looking at the difficult situation in which Nigeria's HEIs conducts EE courses. Although social networking skills are fundamental to entrepreneurs, EE lecturers are found to be using outdated classroom lecture (Robertson & Henderson, 1999; Robertson, Collins, Medeira, & Slater, 2016). EE lecturers were seen to be using the obsolete pedagogy of instruction instead of using guest speakers, industry experts, local business people, that can serve role models and mentors to the students. Scholars have earlier described the EE situation in HEIs in Nigeria as catastrophic.

Given the above, the study by Robertson and Henderson (1999) indicates that lack of identifiable role models, poor media presentation of individuals or small firms hamper the positive impact of EE on entrepreneurship. Also, EE courses lack encouragement from essential influencers on career choice such as teachers and career guidance specialists. For example, Abuzhuri & Hashim (2017) found a negative influence of KWO and ECO among Palestinian university students using a sample of 291 graduating students. Similarly, Mungai and Velamuri (2009) found that parental control as role models may not exist in case of parents' economic failure in self-employment and that when it does occur, it is more noticeable when the descendant is a new grown-up.

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Therefore, the negative result of the relationship between KWO and ECO is not surprising as there are quite some explanations. One possible reason is the pedagogy of teaching the EE courses. Entrepreneurial lecturers were found to be using the outdated classroom lecture instead of a more organised system of school-industry collaborations. In essence, the use of business incubators, guest speakers, coaching, mentoring from entrepreneurial parents, interview subjects, etc. will facilitate the students' business success (Ronstadt, 1987). Another plausible explanation of the negative result may be due to the awareness of novice concerning the limitations of their start-up business. Given that, entrepreneurs hold firmly to their business venture; mentoring should come earlier in the entrepreneurial practice to enable career fulfilment and retaining the beginner entrepreneur (St-Jean & Mathieu, 2015).

Secondly, prior research indicates that mentoring schemes and role models were rarely used in the delivery of EE among Nigeria's HEIs (Agbonlahor, 2016; Izedonmi & Okafor; Maina, 2014; Onuma, 2016; Musa & Adewale, 2015). Indeed, scholars like Solomon (2007) posited that useful EE requires students to have sufficient hands-on experience so that they can learn to add value to their business ventures.

In conclusion, the findings offer to back HCT assumptions of collaborative effect between stakeholders for the common good of all. Similarly, Dyer's entrepreneurial career suggests that internship is significant in transforming ideas into tangible products and services. Precisely, placements have a substantial positive relationship with students EIs and ESE (Botha & Bignotti, 2016).

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5.3.4 The Relationship between Know-why and Entrepreneurial Career Option

The fourth hypothesis (H4) which states that there is a significant relationship between KWY and ECO among polytechnic students was also evaluated to answer the research question as well as to achieve the study objective. In this study, KWY refers to the values, beliefs, and motives for taking entrepreneurial action. KWY justifies the reason for taking entrepreneurial action as well as legitimise it. KWY is fundamental to entrepreneurship because it justifies reasons why individuals initiate entrepreneurial action and persist in it. Several studies in the past have reported significant positive association between KWY and ECO (Abuzhuri & Hashim, 2017; Asghar et al., 2016; Awang et al., 2014; Ayodele, 2013; Bae et al., 2014; Bakar et al., 2015; DeMartino & Barbato, 2003; Ebewo et al., 2017; Fatoki & Oni, 2014; Henderson & Robertson, 1999; Hussain & Hashim, 2015; Isah & Hashim, 2017; Israel & Johnmart, 2015; Matlay, 2008; Mohammed, Maluri, & Haruna, 2011; Peltier & Scovotti, 2010; Sesen, 2013; Souitaris et al., 2007; Udu, 2014; Zhang, Dongyuan, Wang, & Owen, 2015). In this study, PLS-SEM bootstrapping result shows a positive connection between KWY and ECO. Hence, the result supports the hypothesis H4.

The result of the study is in harmony with a survey by Isah and Hashim (2017) that seek to determine the relationship between KWY and ECO on a sample of 68 final year HND students of a monotechnic in north-western Nigeria. Cross-sectional data were analysed using SPSS version 23 for Windows. The findings indicate a significant positive relationship between KWY and ECO among polytechnic students in Nigeria. Similarly, Abuzhuri and Hashim (2017b) studied the influence on KWY

on EIs of Pakistani students of HEIs and used AMOS 18.0 software to analyse the data. The findings indicate a significant positive association between KWY and EI. In another related study, Abuzhuri and Hashim (2017a) conducted a study to determine the influence of KWY on ECO. The study used a cross-sectional survey with a sample of 291 business students of Palestinian university and data analysis conducted using SPSS version 19.0. Statistical results indicate strong support of KWY on ECO. Also, Ebewo et al. (2017) investigate the impact of EE on Botswana university students' intention to entrepreneurship. The results show proof that all the TPB variables directly relate to students' EI. Also, participation in EE was found to positively affect EI by changing attitudes to entrepreneurship and increasing entrepreneurial abilities of students. Similarly, Smith et al. (2016) found a direct and affirmative impact of creativity on EIs. However, gender interacts with creativity to impact upon EIs, and that creativity has a stronger relationship with intention among women than men.

Therefore, polytechnic students in Northwestern Nigeria need to develop positive attitudes to entrepreneurship as a career option to engage in after graduation. As such, HEIs need to impart knowledge into students that will transform the students' mindsets to appreciate and embrace entrepreneurship as a legitimate career option. Also, these findings support the HCT assumption that knowledge and experiences transform individuals and enable one to achieve a better living condition. The results implied that policymakers must understand that government's initiatives on EE would influence ECO among students only if the actions have effects on attitudes, values, mindsets, and motivation of students. Positive beliefs, values, mindsets, and

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motivation will stimulate the student to choose to create new businesses as an alternative career option. The objective of entrepreneurship policy in Nigeria should be to intensify ECO among students through more robust EE initiatives.

5.3.5 The Relationship between Know-when and Entrepreneurial Career Option

The study also tests the fifth hypothesis (H5) which seeks to answer a research question and objective. Hypothesis H5 states that there is a significant relationship between KWN and ECO. In the previous sections of this study, KWN denotes the knowledge of the right time to take entrepreneurial action. KWN is related to intuition and insights, and how to recognise and manage business opportunities. The teaching of KWN competency to students is to attain the strident intuition to perform at the correct or precise instance (Isah & Hashim, 2018). KWN knowledge is needed to impart the skill of having trust on one's intuitions and insights to exploit business opportunities that others overlooked. Previous studies report positive relationship between KWN and ECO (e.g., Bakar et al., 2015; Botha & Bignotti, 2016; Chou, Shen, Hsiao, His-Chi, & Chen, 2014; Eesley & Wang, 2014; Hoe et al., 2014; Isah & Hashim, 2017; Ogbonna, 2015; Ogundele et al., 2012; Okoye & Eze, 2010; Preutt, 2012; Sofoluwe et al., 2013). In this study, the path between KWN and ECO indicates an insignificant value. The result shows another important finding that KWN does not influence KWN and ECO among polytechnic students in Northwestern Nigeria. Hence, the result the hypothesis H5 is not supported.

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The findings of the survey are not surprising as earlier research demonstrates that the use of nonlinear (intuitive) method of information processing by entrepreneurs have an impact on the sustainability and viability of their ventures. Nonlinear (intuitive) factors such as flexibility, creativity, and vision are considered dominant in start-ups, and nascent venture stages. Whereas, linear (analytical) skills are more desirable for sustaining careful attention to detail and for upholding constancy, continuity, and order (Groves, Fowler, Couper, Lepkowski, Singer, & Tourangeauet al., 2011; Johnson, Danis, & Dollinger, 2008). Therefore, there is no definite association between intuitions and entrepreneurial career option.

Botha and Bignotti (2016) investigate to determine whether internship influence EI and ESE and the extent of the internship included in the South African EE curriculum. Empirical findings indicate a positive influence of internships on ESE and EIs of students. Also, the results suggest that placement is not included in the South African tertiary education curriculum due to lack of mentor capacity and administrative bottlenecks. Similarly, Chou et al. (2015) examine 1630 students of HEIs with regards to their entrepreneurial career intentions (ECIs) and the factors influencing it. The results show that students' computer self-efficacy has a substantial effect on ECIs, and entrepreneurial cognition mediates the relationship between EC and CSE.

Hoe et al. (2014) investigate among others, the impact of entrepreneurial curriculum content on the entrepreneurial inclination of community college students' inclination towards entrepreneurship and whether role models incline students to

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entrepreneurship. The findings reveal that more than half of the college students would prefer creating a venture as their future career, while 32.8 percent indicates a desire to start a business after graduation. Also, parents, teachers, career counsellors and role models, have a substantial influence on the students' entrepreneurial career decisions. Hence, intuition and experience have a substantial positive effect on ECO.

5.3.6 The Relationship between Creativity and Entrepreneurial Career Option

The study tests hypothesis H6 which states that there is a significant relationship between CRT and ECO to achieve the study objectives. Note that, creativity refers to an individual's ability to create new innovative thoughts and ideas (Amabile, 1997). Creativity is a cognitive activity that involves the generation of novel and useful ideas and the transformation of thoughts and ideas into new processes and products. The process of implementing creative thoughts is known as innovation. Previous studies indicate a strong positive relationship between creativity and entrepreneurial career option (Amabile, 1997; Barakat, Boddington, & Vyakarnam, 2014; Baron & Tang, 2011; Bello, Mattana, & Loi, 2018; Birdi, 2005; Costa et al., 2016; Fillis & Rentschler, 2010; Gielnik, Frese, Graf, & Kampschulte, 2012; Hamidi et al., 2008; Berglund, & Wennberg, 2006; Hansen, Lumpkin, & Hills, 2011; Schumpeter, 1934; Nzewi & Nwaduhu, 2015; Timmons, Spinelli, & Tan, 1994; Walter & Block, 2017; Zampetakis, Gotsi, Andriopoulos, & Moutakis, 2011). Similarly, a fundamental relationship exists between creativity, entrepreneurship, and EI (Barakat, Boddington, Vyakarnam, 2014; Hamidi et al., 2008; Timmons, 1994). In this study, direct path relationship between CRT and ECO is positive as evidenced by the p-value of 0.007. Therefore, the result supports the hypothesis H6.

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The result corroborates with the findings of Baron and Ensley (2006), who explained that new opportunities in business are recognised when entrepreneurs, through relevant cognitive structures connect dots between apparently unconnected events or trends and then discover patterns in this association signifying new products or services. Similarly, Zampetakis et al. (2011) studied the connection between creativity and EI among students and the influence of education and family in strengthening the link. The outcome of the study of business graduate students indicates that the higher the student's perception of his/her creativity potentials, the higher their EIs. Also, students' creative potentials mediate the influence of family support for creativity and EI. EE course attendance has a moderator role on the effect of creativity on EI, but university support for creativity does not show any effect on students' creativity or their EI. Similarly, Hamidi et al. (2008) investigate EI among participants in an EE course to test the association of students' creativity potentials and their inclination to engage in entrepreneurship. The result indicates that previous experience has a significant positive association with students' EI, while the students' perception of risk negatively influences their EIs. Another study investigated the extent of the relationship among creativity and entrepreneurial development in some manufacturing companies in Nigeria. The study findings showed that creativity has a significant positive connection with entrepreneurial development (Nwezi & Nwaduhu, 2015).

Therefore, the result of the analysis is not surprising because of the established relationship between creativity entrepreneurial career options (Isah & Hashim, 2017). Creative individuals are most likely to identify business opportunities, develop viable

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business ideas, and secure funding to exploit the opportunities than individuals who are not creative (Hamidi et al., 2008; Yeng-Keat & Nasiru, 2015).

5.3.7 The Relationship between Know-what and Creativity

The seventh hypothesis (H7) states that there is a significant relationship between KWT and CRT among polytechnic students in Northwestern Nigeria. The study seeks to achieve the research objectives and answer the research question by testing hypothesis H7. Note that, KWT has previously been referred to in the survey as the theoretical component of knowledge of EE. Knowledge is the building blocks of EE because all other parts depend on it. Also, knowledge management brings specific benefits to the organisation regarding self-confidence, decision effectiveness, loyalty, quality, knowledge, and culture (Chelmecka, 2018). Again, knowledge is a capital investment which fosters creativity, innovation and competitiveness (Chelmecka, 2018). Skilful knowledge management creates conditions for the development of individual creativity. Previous studies confirm the positive relationship between creativity, learning, competence, and competitiveness (Chelmecka, 2018; Karimi et al., 2016; Mitra, Abubakar, & Sagagi, 2011).

Equally, prior research indicates that knowledge is a necessary condition for creativity (Ward & Kolomyts, 2010). Creativity involves manipulating ideas from the base of knowledge. The existence of knowledge makes the manipulation possible. The survey explains the rationale of the significance of a well-structured curriculum that presents students with a reasonable amount of knowledge in an organised fashion. Precisely, a body of knowledge increases students' ability to think

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creatively and to solve problems (e.g., Chi, 2014). In this study, the path which states that KWT influence CRT is positive. The study supports previous studies which indicate a significant positive effect of KWT on CRT among polytechnic students in Nigeria. Hence, the result upheld hypothesis H7.

The study substantiates previous studies that link knowledge to creativity. For example, Mitra et al. (2011) found a significant positive association between knowledge creation, human capital, and entrepreneurship. Also, Sirelkhatim and Gangi (2015) investigate standard and best practice regarding curriculum content and teaching approach of EE. Their findings indicate that the curricula content and teaching approaches differ subject to the programme's objectives from theory base courses targeting to raise entrepreneurial awareness to practical-oriented ones that seek to produce graduates equipped to create a business. In essence, practical-oriented courses relate to entrepreneurial learning propositions for practices to engage students in attaining competencies in entrepreneurship. Equally, Karimi et al. (2016) observed that students who participated in EE courses have a higher level of divergent thinking than those who have not and that knowledge of EE has significant effect on students' capacity to generate innovative business ideas. HEIs, they noted, play an essential role in the creation of knowledge and HC for the enterprise. Also, Lourenco and Jayawarna (2011) investigate the association between creativity enhancing training and learning intentions of nascent entrepreneurs using the TPB. The results indicate that participants that perceive themselves as having a higher degree of creativity were found to have higher tendencies to learn. Therefore, hypothesis H7 which states that KWT sigficantly relates CRT is supported.

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5.3.8 The Relationship between Know-how and Creativity

The eighth hypothesis (H8) which states that there is a relationship between know-how and creativity was tested to achieve the second research question and the second study objective. Previous researches establish a link between the two constructs (Ayoola et al., 2011; Bae et al., 2014; Gundry et al., 2014; Hytti & O'Gorman, 2004; Lazear, 2004; Lisi & Pugno, 2015; Ngwoke et al., 2013). Interestingly, the PLS-SEM bootstrapping result of this study shows no relationship between KHW and CRT. Hence, the result did not support H8.

In this study, the finding is not surprising given the present condition of EE in HEIs in Nigeria. Prior research indicates that problems associated with faulty curriculum, inadequate finance, non-availability of mentors and role models, constrains entrepreneurial skill acquisition through EE courses in Nigeria's HEIs (Musa & Adewale, 2015). Therefore, the skills imparted are inadequate to provoke the students' creativity potentials. Similarly, earlier scholars have argued that the skills learnt in the EE modules are not sufficient enough to make students entrepreneurs (Bignotti, 2013; Edwards-Schachter, Garcia-Granero, Sanchez-Barrioluengo, Pineda, Amar, 2015; Fajobi, Olatujoye, Amusa & Adedoyin, 2017; Sieger, Fueglistaller & Zellweger, 2011; Gartner & Vesper, 1994; ILO, 2013; Marques, 2015; Matlay, 2008; Musa & Adewale, 2015; Oosterbeek, Praag, & Ijssselstein, 2010).

Gielnik et al. (2012) analysed 98 business people to test their creativity in entrepreneurial opportunity identification process by examining the hypothesis that

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information diversity moderates the relationship between divergent thinking and venture idea generation. The results show strong support for the statement.

Also, Edwards-Schachter et al. (2015) explored how social constructivism and social cognitive theory of entrepreneurship explain the development of creativity, innovation and entrepreneurship (CIE) as meta-competence by examining how engineering students from Spain and USA, their perception of CIE relationship, the extent to which they believe the education system develops CIE. Empirical results suggest that most students see themselves as creative people and consider that creativity is strongly related to innovation and entrepreneurship. American students than Spanish are more convinced of the relevance of creativity among entrepreneurs competence. Moreover, their perceptions contrast with the role assigned to education where they consider that creativity is still a pending subject in engineering education.

Also, Fajobi et al. (2017) investigate the significance of apprenticeship to Nigeria's development as well as reasons for the decline in apprenticeship as well as the career consequences for the youths. The study used cross-sectional design, and a combination of in-depth interview and question to obtain data. Cluster sampling was the desired sampling technique to distribute 150 sets of questionnaires and purposively conducted in-depth interviews with ten interviewees. Data were analysed using content analysis and descriptive statistics. The result indicates that apprenticeship must be encouraged for Nigeria to develop economically.

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5.3.9 The Relationship between Know-who and Creativity

The ninth hypothesis (H9) formulated to achieve the second objective and offer an answer to the research question states that there is a significant relationship between KWO and CRT. Note that, KWO refers to social networking skills and an ability to communicate and cooperate with stakeholders and experts. The findings support the hypothesis as the PLS bootstrapping result suggests that there is a definite relationship between KWO and CRT. Previous literature suggests a positive association between KWO and CRT (Bosma et al., 2011; Martin-Sanchez et al., 2018; De Carolis, Litzky, & Eddleton, 2009; Gimmon, 2014; Laviolette, Lefebvre, & Brunel, 2012; Lourenco & Jayawarna, 2010; Munoz-Doyague, & Nieto, 2011; Perry-Smith, 2006). Therefore, PLS-SEM bootstrapping result indicates a positive relationship between the mediator and this independent variable as evidenced by empirical data. Hence, the effect supports H9.

The result is not surprising because of the positive impact of know-who on creativity revealed by previous studies. For example, Gundry et al. (2014) investigates the effects of perception of creativity skills acquired by 137 MBA part-time students who were as well full-time workers. The findings indicate that creativity skills learnt by students inclined their self-perceptions of creativity that students transfer their creative talents to their work groups, leading to a positive influence on insights of team support for innovation, and their group and firm's tangible, innovative results. Equally, Chang, Benamraoui, and Rieple (2014) found that learning-by-doing develops entrepreneurial skills among students as well as promotes their knowledge of social businesses.

5.3.10 The Relationship between Know-why and Creativity

Another hypothesis developed to achieve the second study objective was through hypothesis H10 which states that there is a significant relationship between KWY and CRT. The study findings support the hypothesis as the regression result suggests that there is a definite association between KWY and creativity. Previous studies show that KWY associates with creativity positively (Block, Sandner, & Spiegel, 2013; Fatoki, 2010; Kirkley, 2016). Hence, the findings upheld the hypothesis H10.

The result of this study validates prior research that there is a significant association between KWY and CRT. For instance, Block, Sandner, and Spiegel (2013) found that entrepreneurs motivated by opportunity are more willing to take risks than necessity entrepreneurs. Also, entrepreneurs motivated by creativity are more risk-tolerant than other entrepreneurs. Equally, Kirkley (2016) advanced four specific values that are critical to the motivation of entrepreneurial behaviour, including; creativity, ambition, daring, and independence. These values are consistent with values credited to self-determination, self-efficacy and the uniqueness of participant associated with entrepreneurship. Similarly, Fatoki (2010) explores the motivators and obstacles to EIs among the South African HEIs graduates. The study used a sample of 701 final year students and collected data through self-administration. The result of data analysed through descriptive statistics, principal component analysis, and t-test revealed that the motivators of EI were creativity, autonomy, economy, capital, and employment. Also, the study indicates that the EIs of South African students are very feeble. Furthermore, impediments to EI of South African graduates include entrepreneurial skills, capital, government support, crime, economy, and risk.

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Also, Hoe et al. (2014) investigate among others, the impact of entrepreneurial curriculum content on the entrepreneurial inclination of community college students' inclination towards entrepreneurship and whether role models incline students to entrepreneurship. The findings reveal that more than half of the college students would prefer creating a venture as their future career, while 32.8 percent indicates a desire to start a business after graduation. Also, parents, teachers, career counsellors and role models have a substantial influence on the students' entrepreneurial career decisions.

5.3.11 The Relationship between Know-when and Creativity

The study object mirrored in H11 states that there is a significant relationship between KWN and ECO among polytechnic students in Northwestern Nigeria. The result suggests a significant association between KWN (intuition and insight) and entrepreneurial career option. Previous studies indicate a significant relationship between KWN and CRT (Dane et al., 2011; Kaufman, 2009; Sadler-Smith, 2016). In this study, the PLS-SEM bootstrapping result shows a positive relationship between KWN and CRT in the study model. Hence, hypothesis H11 which states that KWN relates to CRT is supported.

The findings in this study corroborate previous studies that show proof of the positive relationship between KWN and CRT. Previous studies indicate a significant correlation between KWN and CRT (Dane et al., 2011; Kaufman, 2009; Sadler-Smith, 2016). In this study, analysis of data indicates a positive association between KWN and CRT. Therefore, hypothesis H11 which states that KWN influence ECO is

supported. Scholars have claimed difficulty in teaching KWN to students who have no entrepreneurship experience because know-when is attained through concrete experiences (Lo, 2011). However, KWN can as well be transferred through coaching, gaming, simulations, internships, apprenticeship, etc. (Fayolle, 2008; Idris & Rajuddin, 2012).

Botha and Bignotti (2016) investigate to determine whether internship influence EI and ESE and the extent to which internship is included in the South African EE curriculum. Empirical findings indicate a positive influence of internships on ESE and EIs of students. Also, the results suggest that placement is not included in the South African tertiary education curriculum due to lack of mentor capacity and administrative bottlenecks.

Similarly, the study examined the relationship among the independent variable, mediator variable, and the dependent variable. The hypotheses examined were stated inter-alia as:

H12: Creativity mediates the relationship between know-what and entrepreneurial career option.

H13: Creativity mediates the relationship between know-how and entrepreneurial career option.

H14: Creativity mediates the relationship between know-who and entrepreneurial career option.

H15: Creativity mediates the relationship between know-why and entrepreneurial career option.

H16: Creativity mediates the relationship between know-when and entrepreneurial career option.

5.3.12 Mediating Effect of Creativity on the Relationship between Know-what and Entrepreneurial Career Option

The first indirect relationship is concerned with the mediating effect of CRT on the relationship between KWT and ECO. As hypothesis H12 states: Creativity mediates the relationship between know-what and entrepreneurial career option. The third study objective was tested against the research question which seeks to determine whether creativity mediates the relationship between KWT and ECO.

As expected, PLS-SEM path modelling results of mediation analysis supported the twelfth hypothesis H12. In a way, the statistical results indicate that creativity exerts a mediating relationship between KWT and ECO among polytechnic students in Northwestern Nigeria. The findings corroborate human capital theory (HCT) assumption that investment in education, skills, creativity, and experience is a capital good (Akhuemonkhan et al., 2013). Also, individuals should be confident and develop creative approaches to skills, products, processes, and ideas. Previous studies have explicated entrepreneurship through lens of HC (Akhuemonkhan et al., 2013; Bae et al., 2014; Ogunyomi & Bruning, 2015; Maresch et al., 2016; Martin et al., 2013; Walter, Parboteeah, & Walter, 2011).

The study by Lourenco and Jayawarna (2011) found that creative individuals who rate other training outcomes as positive and perceived usefulness serve as a reliable mediator on the relationship between learning from creativity training and emerging entrepreneurs' intention to make use of their learning. Precisely, the findings agree with TPB as applicable to entrepreneurship and trainees perception of creativity as a driver for increasing learning habits between emerging entrepreneurs (Lourenco & Jayawarna, 2011).

Hence, an effort to promote spending in HC was seen to effect on rapid economic growth for the society. Therefore, investments by the government to increase the knowledge and skills of individuals increase the economic prosperity of individuals, communities and nations. Similarly, the study findings go in harmony with Dyer's entrepreneurial careers which suggest that various factors influence the choice of entrepreneurship as a career. The Dyer's model assumes that enterprise is a function of career socialisation, career orientation, career progression and antecedents of career choice. Accordingly, education is a fundamental element that prepares a person for an entrepreneurial career (Farashah, 2013; Keat et al., 2011, Kuratko, 2003; Peterman & Kennedy, 2003; Wu & Wu, 2008). Hence, entrepreneurial students should learn to convey business ideas to the market better and quicker than non-entrepreneurial students. Knowledge of EE gives students the self-confidence to contemplate starting their own business (Dyer, 1994).

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5.3.13 The Mediating Effect of Creativity on the Relationship between Know-how and Entrepreneurial Career Option

Furthermore, to achieve the mediation objective, hypothesis H13 was assessed. It states that creativity mediates the relationship between know-how and entrepreneurial career option among polytechnic students in Northwestern Nigeria. In this study, however, the statistical analysis shows that creativity does not reconcile the relationship between know-how (KHW) and entrepreneurial career option (ECO).

This outcome is not unusual given the fact that the path from know-how to creativity is not significant in the direct relationship as reported in the preceding chapter. Hence, the outcome does not support H13. A plausible cause for this is that the more entrepreneurial skills acquired by students, the more likelihood of engaging in entrepreneurial career option. Alternatively, higher technical skills of entrepreneurship suggest high engagement in the enterprise as a career option. Therefore, the role of creativity in explaining the association may not be significant.

Furthermore, the insignificant relationship might be explained concerning the teaching and learning of entrepreneurship in the Nigerian HEIs. EE modules seem to be more concentrated on awareness creation about entrepreneurship, as against the experiential method that scholars have suggested being a precondition for evolving the next cohort of entrepreneurs (Bell, 2015).

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Another possible reason for the adverse outcome is the general absence of mentoring programmes in EE modules enables students to utilise their creative potentials to practical life situation. Previous literature suggests inclusion of robust role modelling schemes in the EE courses (Roberson & Henderson, 1999). For instance, Ajake et al. (2014) explored and recommended ways through which skill acquisition, creativity, and technological tools can better contribute to educational goals. The study suggests for the restructuring and incorporation of EE in HEIs' curriculum through delivery method, skill acquisition integration, and ICT integration as a vital tool and an engine that drives the economic and social development of a country through job creation and growth inducement. Similarly, creativity enhancing training is inadequate in Nigeria's polytechnic EE modules, whereas it contributes significant improvements in HEIs' creative thinking ability (De Tienne & Chandler, 2004).

Also, prior research reveals that teachers can use the classroom to establish supportive creativity learning from research insights (Beghetto & Kaufman, 2014). Teachers should also encourage students to share creative ideas and be given feedback when they do so, and even model creativity in daily teaching and learning. Additionally, creativity was found to have a positive impact on the relationship between post-training outcomes and business opportunities (De Tienne & Chandler, 2004).

Pruett (2012) used analysis of variance, t-tests, and linear modelling to assess students' EI and entrepreneurial disposition after participating in EE workshop series. The results reveal that entrepreneurial nature and participation in the

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workshop are significantly inclined to intentions, but exposure to role models and the strength of family support did not significantly impact upon EIs. The study by Bodla and Naeem (2014) investigates the link between intrinsic motivation and sales performance using salesforce creative performance as a mediator. Using SEM, the study found that sales force artistic performance is cultivated by the inherent motivation that, in turn, encourages sales performance.

The result, however, does not invalidate previously established studies that report significant association between KHW and ECO and between KHW and CRT rather open up aveneus for more research on the connection between KHW, CRT, and ECO (Shane & Nicolaou, 2015).

5.3.14 The Mediating Effect of Creativity on the Relationship between Know-why and Entrepreneurial Career Option

The hypothesis H14 states that creativity mediates the positive relationship between KWO and ECO among polytechnic students in Northwestern Nigeria. However, in this study, the direct connection between KWO and ECO was not significant. KWO has a direct and positive impact on CRT. Therefore, the result shows that, whereas there is no direct relationship between KWO and ECO, KWO also affects ECO through CRT. Put differently, the connection between KWO and ECO was enormous and significant due to the mediation role of creativity. Precisely, in this study, social networking skills' relations with ECO can best be understood through the mediating role of CRT. Therefore, the finding upheld the hypothesis H14.

Interestingly, prior research suggests that creativity leads to start-up in urban areas as well as the social network matters, especially in rural areas. Creativity, proactivity and EI mediate the relationship (Freire-Gibb & Nielsen, 2011). Also, proactivity was found to relate to creativity as well as perceived entrepreneurial desirability and directs attention to creativity as an essential competence in the entrepreneurial process. Equally, entrepreneurs and managers of micro and small enterprises (MSEs) in northern Greece were found to be conscious of the significance of creativity and innovation, believing that the terms are positively related to each and interact in the development of their business (Sarri, Bakouros, & Petridou, 2010). Similar to the situation in Nigeria, MSEs in Greece value training interventions and obstacle concerning infrastructure, time, financial resources, experience and not risk-averse (Sarri et al., 2009). Similarly, entrepreneurial passion and creativity as antecedents of EIs were mediated by ESE, thereby confirming common belief that individuals need to feel self-efficacious for ECO (Biraglia & Kadile, 2017).

5.3.15 The Mediating Effect of Creativity on the Influence of Know-when on Entrepreneurial Career Option

Similarly, the study tests the mediation objective on the relations between KWY, CRT, and ECO through H15, which states that creativity mediates the relationship between KWY and ECO among polytechnic students in Northwestern Nigeria. The statistical result shows that creativity mediates the relationship between KWY and ECO. The result, yet, is not unexpected given the fact that the path from KWY to CRT was significant in the direct link as outlined in the previous chapter. Therefore, hypothesis H15 was supported.

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Previous studies have established a direct and significant relationship between know-why (attitude) and entrepreneurial career option (Abuzhuri & Hashim, 2017; Ferreira, Loiola, & Gondim, 2017; Fitzsimmons & Douglas, 2005; Isah & Hashim, 2017; Kusmintarti, Thoyib, Ashar, & Maskie, 2014; Yarima & Hashim, 2016). For instance, Kusmintarti et al. (2014) investigate the mediating effect of creativity on the relationship between entrepreneurial attitudes and EI among Indonesian polytechnic students. The study findings reveal that creative student inclined towards founding a new business in a future time, signifying that creativity can shape students' positive thinking towards an entrepreneurial career option. Similarly, Fitzsimmons and Douglas (2005) investigate the association among entrepreneurial abilities and attitudes and EIs among students in Australia, China, India, and Thailand. The result indicates that entrepreneurial attitudes are significant in elucidating career decisions among all the countries studied. The study also established differences among cultures in the level of entrepreneurial attitudes that explained entrepreneurial intention.

Furthermore, Ferreira, Loiola, and Gondim (2017) conducted intensive literature review in empirical studies to determine contextual and individual predictors of EI among college students. The study used the TPB to investigate students' attitudinal disposition to start their businesses. Their findings indicate that positive attitude, perceived control, internal locus of control, creativity disposition, personal fulfilment motivation self-efficacy, perception of barriers, and personal traits were individual predictors of EI among students. The study further found the contextual predictors of

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EI as the students' network of friends and families that serve as role models to nurture and grow the business.

The result implied that attitudes, values, and motivations held by students relate positively with their creativity which also has effects on the choice of entrepreneurship as a career option. The study is consistent with the Dyer's model which assumes that personal, social and economic factors predict entrepreneurship among students (Dyer, 1994).

5.3.16 The Mediating Effect of Creativity on the Influence of Know-when on Entrepreneurial Career Option

Finally, investigating the mediation effect of creativity on the association between KWN and ECO is yet another definite purpose connected to the study objective number three. Thus, to achieve the study's specific objective, H16 was tested, and it envisages that creativity mediates the relationship between KWN and ECO. Fascinatingly, the result indicates the mediatory role of CRT on the positive relationship between KWN and ECO as reasonably significant. Therefore, the effect supports hypothesis H16. The findings shed more light that CRT ability to influence KWN can lead polytechnic students to engage in entrepreneurial career after graduation.

Consistent with the HCT, the finding suggests that KWN component of EE (intuition and insights) as a significant factor in taking entrepreneurial decisions and knowing the right time to act entrepreneurially can more effectively lead students to engage

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ECO when they have high creativity potentials. To this end, the outcomes of the study suggest that students must be efficiently learned in all the components of EE in order develop their creative possibilities to enable them to engage in entrepreneurial career upon graduation.

In conclusion, the findings of the study show that components of EE (KWT, KWO, KWY, and KWN) indirectly influence ECO through CRT. The result necessarily added clarification for the presence of the association between these components of EE and ECO. The results further suggest that HEIs need to harness the creative potentials of students to enable them to engage in ECO by founding new businesses. Graduate students' engagement in ECO will make them self-employed with possibilities of being employers of labour rather than employees after graduation (job creators rather than job hunters). After all, the journey from EI to new venture creation is ambiguous and uncertain (Nabi, Holden, & Walmsley, 2010).

Although this study reports a positive association between components of EE, CRT, and ECO, HEIs in Northwestern Nigeria, especially polytechnics do not impart the required entrepreneurial competencies to students. The current position of EE in Nigeria's HEIs does not support the transformation of mindsets of Nigerian students towards ECO as the desired career alternative after graduation. The entrepreneurial learning environment is not magnanimous, and teaching objectives hardly accomplished. Incessant strike of lecturers, weak and inadequate funding of EE programmes, misconception of the rationale of the EE programmes, insufficiently

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trained workforce, weak curriculum, and poor infrastructure make learning objectives challenging.

Also, an inappropriate pedagogy of instruction inadequately taught by EE lecturers, and non-availability of mentors and role models combined to make entrepreneurial learning objectives very hard to achieve. Towards this end, the predictive role of EE in changing the mindset of students towards entrepreneurial career rather than becoming employees after graduation become very difficult to achieve. Since jobs are sparse and the education system produces more than what the labour market can absorb, the government's objective of reducing unemployment among HEIs graduate is hard to realise. Unemployment persists, leading to more crimes, political hooliganism, kidnappings, armed robbery, vandalisation of public property, etc. to meet up with their daily needs for survival. Crimes perpetrated by this group of youths continue despite several attempts by the government to put an end to it. The situation validates the famous saying that "an idle mind is the devil's workshop".

Realistically, based on available evidence in the study, it is not likely that HEIs in Nigeria to realise the objectives of EE based on the non-supportive environment that the educational system in Nigeria operates. The government has a stronger impact on ECO if it provides the necessary support to HEIs towards the efficient delivery of entrepreneurial learning. The government needs to realise and understand that physical and financial resources are essential to the efficient delivery of EE programmes in HEIs in Northwestern, in particular, and Nigeria in general.

Similarly, the pedagogy of teaching must be aligned with current national development objectives, for example Industrial Revolution 4.0 (IR 4.0).

5.4 Implications of the Study

Governments, policymakers, regulatory agencies, HEIs, and researchers in the area of entrepreneurship have given much attention to entrepreneurial intention, new venture creation, opportunity recognition, start-up performance, opportunity exploitation, and other variables influencing entrepreneurship as a career alternative. Similarly, prior entrepreneurial research paid much attention analysis of intention as a dependent variable. Nonetheless, recent studies are skeptical of using intention as a dependent variable in entrepreneurship research as the distinction between doers and dreamers is hard to make (Hamid et al., 2008). Hence, the need to shift from intention to action as the capacity of intention to predict action is sometimes ambiguous (Nabi et al., 2010).

Based on the results of this study, the research has significant implications, explicitly regarding ECO among students in the context of polytechnics in Northwestern Nigeria. The findings of this study provide theoretical, practical, and methodological implications. These implications are discussed in the subsequent portions of the study.

5.4.1 Theoretical implications

The literature gaps identified in this study informed the development of the conceptual framework and supported by the two underpinning theories. Explicitly,

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the hypothesised model was supported and drawn on the perspective platform of Human Capital Theory (Becker, 1964; Mincer, 1958) and Dyer's (1994) model of entrepreneurial careers. The HCT framework suggests that the concern of governments is a robust human capital (HC) formation through EE (Martin et al., 2013). Hence, governments support EE through funding investments both directly and indirectly. Entrepreneurship plays an integral part in employment creation and economic growth. Consequently, the study incorporates all the components of EE and ECO as explained by the HCT and Dyer's model of entrepreneurial careers. Also, the study incorporated creativity as the mediating mechanisms to explain better and understand how and why components of EE relate to ECO among polytechnic students. In other words, the research study incorporated creativity as a mediating variable on the relationship between components of EE and ECO. The empirical findings suggest that this study has made several contributions to the body of knowledge, particularly on the KWT, KHW, KWO, KWY, KWN, CRT, and entrepreneurial career option relationships.

5.4.1.1 Contribution from HCT Domain

The HCT proposes that education is a fundamental requirement for the development of a nation's human capital (HC). It is suited to an examination of the outcomes of investments in education (Martin et al., 2005). Scholars have posited that there is a relationship between various forms of success and accumulated education and experiences (Rauch, Frese, &Ustsch, 2005; Cassar, 2006; van der Sluis, van Praag, & Vijverberg, 2005). The application of HCT to explain various aspects of entrepreneurial success is well established in the literature (Pfeffer, 1994). HCT

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assumes that there is a connection between HC investment (time, money spent in EE courses), HC assets (capabilities that may be gained from investments in knowledge and skills), and entrepreneurial outcomes (growing or creating a new business).

HCT further assumes that individuals or groups with more significant levels of skills, knowledge, and other capabilities such as creativity and innovativeness will achieve higher performance outcomes than those with lower levels (Ployhart & Moliterno, 2011). Therefore, the HCT assumes that the HC is measured by levels of education, experience, entrepreneurial background experience, and other experiences of life.

Consequently, individuals that took higher level courses in entrepreneurship have higher intention to start a business than those who did not take entrepreneurial courses (Galloway & Brown, 2002). Also, individuals that have EE and training (EET) are more likely to start businesses than those who do not (Kolvereid & Moen, 1997). Similarly, persons that have EE are more likely to identify business opportunities than those who do not have EE (DeTienne & Chandler, 2004).

Therefore, the connection between HCT and EE is reasonably clear (Martin et al., 2013). Scholars like Unger et al. (2011) have found a significant positive relationship between education and the successful accomplishment of entrepreneurial activities. Though, it is not clear that EE is explicitly connected with increases in entrepreneurial HC assets or entrepreneurial consequences.

Martin et al. (2013) used Becker's (1964) learning standpoint of HC and meta-analysed the EE literature to evaluate the strength of relationship among EE and entrepreneurial HC assets and EE and entrepreneurial outcomes. Their review discovered 79 studies that have examined the effectiveness of EE in increasing entrepreneurial HC assets or entrepreneurial outcomes. Many of the studies meta-analysed found a positive association between EE and the broad classifications of entrepreneurial HC possessions. For instance, the definite link was established among EE and entrepreneurial skills and entrepreneurial knowledge (Fayolle, Lassas-Clerc & Tounes, 2009; Hanke, Warren, & Kisenwether, 2010). Also, there is a relationship among EE and positive attitudes to entrepreneurship (Souitaris et al., 2007; Cooper & Lucas, 2007; Zhao et al., 2005), the connection between EE and intentions to create a new venture (Athayde, 2009).

Consequently, the current study revalidated and reaffirmed the HCT assumption by establishing the significant relationship between EE and ECO in the Nigerian context. Even though, the relationship between KWO (attitudes) and ECO was not supported in the current study, the result does not indicate that the survey nullified the underpinning theory. This is because there are existing inconsistencies in the results on the relationship KWO component and ECO (Fayolle & Gailly, 2009; Garalis & Strazdiene, 2007). Similarly, the result does not invalidate the underpinning theory on the relationship between KWN and ECO which was not supported in this study because prior studies indicate inconsistencies on the link between KWN (intuition and insights) component of EE and entrepreneurial behaviour (Mentoor & Friedrich, 2007).

Moreover, as most of the studies on components of EE and ECO (Abuzhuri & Hashim, 2017a; Abuzhuri & Hashim, 2017b; Yarima & Hashim, 2016) have been conducted on university students, the current study also provided a theoretical implication by giving additional empirical evidence in the domain of HCT in the polytechnic context. As such, the study stretched and further extended the scope of this theory to the context of northwestern Nigeria and also developing economies as suggested by many researchers (Akhuemonkhan et al., 2013).

5.4.1.2 Contribution from Dyer's entrepreneurial Model

The Dyer's Model of Entrepreneurial Careers synthesises and explores the four components of the theory of entrepreneurial careers which include career selection, career socialisation, career orientation, and career development (Dyer, 1994). Essentially, Dyer's model assumes that education is one of the most important influences of career socialisation that makes an individual opt for an entrepreneurial career (Muofhe & du Toit., 2011). According to the model, role models are a significant social factor that impacts on people's intentions to choose an entrepreneurial career. Consequently, the model suggests that education and role models have substantial influencing effects on entrepreneurial intentions. Specifically, Muofhe and du Toit (2011) state that a major assumption of Dyer's (1994) is the belief that taking particular courses in entrepreneurship (EE courses) or receiving training on how to create a business might give some people the self-confidence required to establish their ventures. Similarly, Adekiya and Ibrahim (2016) contended that early exposure to EE courses at initial levels of education might be particularly effective in increasing interest in entrepreneurial career.

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Prior studies have explained entrepreneurial career choice through the lens of Dyer's (1994) entrepreneurial model. For instance, scholars like Gibb and Ritchie (1982) contended that education, training, family influence, and perceived job opportunities are important factors influencing the decision to become an entrepreneur after graduation. Similarly, Lee-Gosselin and Grise (1990) opined that training and development play a crucial role in intention to start a new venture. They argued that parents who taught their children from childhood the tenets of hard work, honesty, and independence are modelling their entrepreneurial competencies.

Similarly, Zhao, Seibert, and Hills (2005) posit that prior researches have found that among other things, awareness of formal learning from entrepreneurial courses had the strongest positive association with new start-up intentions through the mediatory role of entrepreneurial self-efficacy. This shows that a sound education and training in the area of entrepreneurship will offer the much-desired self-confidence and beliefs for new venture creation and success that will consequently translate into intentions for a business start-up.

This view was corroborated by other scholars who contended that promoting active learning among students and giving them hands-on experiences in the real state of affairs will enable them to learn for competency building (Izquierdo & Buelens, 2008). They reasoned that giving students extensive practice will enable them to gain confidence in utilising the attained competencies in different situations related to entrepreneurial activities. Also, Langowitz and Minnitti (2007) observe that the

inclination to create new ventures is positively associated with alertness to current opportunities as well as ones self-assessment of having proper knowledge and skills.

Previous entrepreneurship researches have explained entrepreneurial activities using the dyer's model (Bignotti, 2013; Muktar, 2013; Munfhe & du Toit, 2011; Sharma & Madan, 2014; Zampetakis et al., 2011). However, literature has shown that previous studies have established that components of EE significantly relate with entrepreneurial career option indirectly through mediating variables (Abuzhuri & Hashim, 2017a; Abuzhuri & Hashim, 2017b; Chen, 2010; Yarima & Hashim, 2016). Other studies have examined the mediating role of creativity (Bodla & Naeem, 2014; Gundry et al., 2014; Heinonen et al., 2011; Huang et al., 2016; Smith et al., 2016; Wang & Zhu, 2011; Yeng Keat & Abdullahi, 2015). On this account, little or no attention has been given to the mediatory role of creativity in explaining how and why KWT, KHW, KWO, KWY, KWN, and entrepreneurial career option relationship exists. Although past studies have demonstrated that ECO depends primarily on components of entrepreneurship (Hamidi et al., 2008; Wennberg & Berglund, 2006; Yeang Keat & Abdullah, 2015), the studies fail to examine its mediating effects. Given that, past studies recommended that the intersection of entrepreneurship education, creativity, and entrepreneurship need further examination (Hamidi et al., 2008; Yeng-Keat, Bhatti, Abdullah, 2015).

As expected, this study contributes theoretically, by empirically testing the mediatory role of creativity in the relationship between KWT, KHW, KWO, KWY, KWN and

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entrepreneurial career option. The result indicates that creativity mediates the relationship between KWT, KWO, KWY, KWN and entrepreneurial career option.

5.4.2 Managerial Implications

Fundamentally, ECO has been recognised as one of the major contributors to employment generation, economic development, and poverty reduction among graduate students. Governments and policymakers have realised that decisions relating to EE have a direct effect on entrepreneurship as a career option. Therefore, it became necessary to reveal what governments and politicians must do to improve ECO among polytechnic students in Northwestern Nigeria. In the literature section, low ECO among Nigerian students was blamed on inadequate curriculum of instruction, inadequate funding, insufficient qualified EE lecturers, inappropriate pedagogy of teaching, lack of knowledge of the rationale of EE programmes by the students, lack of facilities in HEIs, and poor infrastructure (e.g., Akhuemonkhan et al., 2013; Diyoke, 2014; Ekoja & Odu, 2016; Maina, 2014; Okeke & Eme, 2014; Onuma, 2016; Salami, 2013).

It is pertinent to note that over the years, Nigerian government has initiated several entrepreneurial development programmes to assist the acquisition of entrepreneurial knowledge and skills among youths and graduates (Ajayi, 2015; Akuemonkhan et al. 2013; Maina, 2014; Ogbonna, 2015; Salami, 2013). Nevertheless, the absence of enlightenment on the existence of such government support programmes was attributable to the non-patronage of HEI students in the activities of such entrepreneurial initiatives. Notwithstanding, even those programmes that are

knownare not well coordinated to give mentoring support, and thus not patronised by the either the HEIs or the students. Given the present situation, the government needs to create awareness among these institutions and improve coordination to make them familiar to the students through visitations, guest lecturing, talks, excursions, and capacity building programmes, etc.

In fulfilling its role of providing quality education to the populace, the government must set aside a colossal amount of funds for the development of the education subsector. Given the current economic situation in the country and the difficulty in obtaining funds from the government, HEIs should be encouraged to use their "connections" to get funding from other available sources. HEIs should explore the possibility of obtaining financial assistance and technical support from both local and international donor agencies and wealthy individuals. Similarly, banks and other financial institutions should extend their community support to these institutions to equip entrepreneurship study centres (ESC) with the required facilities to enhance the delivery of teaching and learning by the EE students because investment in education should not be the exclusive preserve of government alone. Therefore, having a well-developed ESC furnished with state of the art facilities and qualified EE lecturers will develop entrepreneurial mindset among students and encourage them to choose ECO as a viable career option. Hence, it is also recommended that the government and its agencies should help HEIs to exploit other available sources of financing to improve their internally generated revenue (IGR) to increase their financial prowess and reduce total dependence on government.

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Also, education intervention agencies such as Tertiary Education Trust Fund (Tetfund) should integrate entrepreneurship development through EE programmes to their areas of intervention to the HEIs in Nigeria. Given the significance of industrial harmony in the conduct of teaching and learning, it is imperative that lecturer should explore alternative ways of addressing their grievances rather than resorting to strikes. Strikes have devastating effect on the process of teaching and learning. Similarly, the government can look at the possibility of establishing entrepreneurial universities vested with the responsibility of conducting researches in addition to teaching specialised courses in areas of environmental scanning, opportunity recognition, opportunity exploitation, venture creation, and business management using state of the art facilities. The entrepreneurial university should impart entrepreneurial knowledge and skills on a longer-term basis rather than a two-credit hour course taken for just one semester.

Furthermore, the government should integrate all the previous entrepreneurship development programmes into the board to make it responsible for entrepreneurship development and employment generation. For instance, the FGN should consider replacing the National Youth Service Corps (NYSC) with a national board for entrepreneurship development (NBED) since the scheme is no longer serving the purpose of establishing it. In so doing, the governments must ensure continuity of plans rather than separate programme with a view to scoring cheap political points. The political climate in Nigeria is undoubtedly making support services, regulatory frameworks, and infrastructural delivery very weak. However, when HEIs and students perceive the political environment to be hostile, they are less likely to

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encourage ECO among students. Put differently; they should create an enabling environment that will promote the creation of awareness and appreciation of entrepreneurship as the legitimate entrepreneurial option to engage in after graduation.

Based on the findings of this study, and previous studies, it seems empirically established that all the components of EE positively impact on ECO among polytechnic students in Northwestern Nigeria. Therefore, HEIs need to appreciate the significance of EE in influencing ECO among students. EE programmes must create awareness about ECO and stimulate the students to decide to engage in ECO immediately after graduation. CRT is an indispensable element of entrepreneurship as such must be embedded in imparting entrepreneurial knowledge and skills. CRT is significant to opportunity identification, recognition, and subsequent venture creation. Therefore, EE courses must stimulate students to develop EIs, be assisted to recognise business opportunities, and supported in organising resources to exploit entrepreneurial opportunities by creating new business venture as alternative option in the shortest possible future. Creative students have a potential to connect the dots and see venture opportunities where others do not understand. Nigeria can achieve its industrialisation revolution plan 4.0 (NIRP) through robust EE programmes in HEIs.

5.4.3 Methodological Implication

In Northwestern Nigeria, there are few studies on the relationship of components of EE and ECO. Previous studies have indicated the manner in which know-what, know-how, know-who, know-why, and know-when components of EE relate to ECO

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(Abuzhuri & Hashim, 2017a; Abuzhuri & Hashim, 2017b; Asghar et al., 2016; Fayolle & Gailly, 2015; Hussain & Hashim, 2015; Isah & Hashim, 2017; Isah & Hashim, 2018; Middleton & Donnellon, 2013; Yarima & Hashim, 2016). Secondly, prior studies on ECO have mainly used AMOS, PLS-SEM version 2.0 and SPSS, to the best knowledge of the researcher, a very small number have used Smart PLS-SEM 3.2.7 (Ringle *et al.*, 2015) to yield results.

A significant contribution to literature in this study is the intergration of all the components of EE into a single framework to yied results. Prior studies exclude an analysis of know-when as a component of EE (e.g., Abuzhuri & Hashim, 2017; Lo, 2011). In this study, all the components of EE were analysed to yield result, showing the essential contribution of know-when to opportunity recognition and exploitation.

Another important contribution of this study is the context. Most studies on the relationship between EE and dimensions of ECO were done in UK, USA and other developed countries of the world (e.g. Abuzhuri & Hashim, 2017; Fatoki, 2014). It is yet another contribution to study EE, CRT and ECO in the Nigerian context. Furthermore, most studies of EE programmes in HEIs are intention based. However, prior studies have challenged the power of intention in predicting entrepreneurship, because of the difficulty of distinguishing the dreamer from the doer (Hamidi et al., 2008; Nabi et al., 2010). Therefore, unlike previous studies, this study examined ECO as a dependent variable. Also, creativity studies about entrepreneurship were scarce; as such an investigation into the intersection of EE, CRT and ECO remains a fertile research area (Berglund & Wennberg, 2006; Gustiawan, Emrizal, Primadona,

2014; Hamidi et al., 2008; Matthews, 2007). The present study has incorporated CRT as a mediator on the relationship between EE and ECO which manystudies did not address.

Furthermore, most of EE studies were either conducted in a specific type of HEIs or confined to comparisons of students from different courses. For example, most studies examined the EI of university students or compared EI of students from different subject areas. Many of such studies compared students between science and engineering disciplines, business and non-business students, entrepreneurship and non-entrepreneurship students, and many more. For example, Abuzhuri and Hashim (2017) studied the relationship between EE and ECO, moderated by opportunity recognition among university students in Palestine. Yarima and Hashim (2016) investigated the association of EE and ECO, mediated by entrepreneurial self-efficacy among students of Northwestern Nigeria. Similarly, Asghar et al. (2016) studied the EI of science and engineering students. But the current study covers all courses offered in polytechnics in Northwestern Nigeria.

The studies of Yarima and Hashim (2016) and Abuzhuri and Hashim (2017) investigated ECO among university students. The present study examined ECO among polytechnic students. It is expected that this study had contributed to the body of knowledge by covering the sectorial gap that exists. It all adds to human capital theory and Dyer's entrepreneurial careers as they are tested in the area of ECO.

Equally, the present study contributed to the methodology adopted, the questionnaire instrument items and specific items were adapted from the previous studies conducted in other parts of the world. Especially, measures of entrepreneurial career option were changed from the earlier works of Drnovsek and Glas (2002) done in Slovenia and the Czech Republic, Le Roux (2005) in South Africa, Steenekamp and Van der Merwe (2011) in South Africa, Moy et al. (2003) Hong Kong; and Theng and Boon (1996) conducted in Singapore. The measures of know-what, know-how, know-who, and know-why components of EE were adapted from the previous work of Lo (2011) which was done in Hong Kong. Also, the measures of know-when element of EE was adapted from the work of Carlson (2008) conducted in the USA. Furthermore, creativity measure was adapted from NHCT, retested by Olatoye et al. (2010) conducted in southwestern Nigeria. The present study had contributed in testing these instruments in the context of northwestern Nigeria, which very few studies did. Also, this study adds to knowledge by formulating and testing 11 direct hypotheses and 5 indirect hypotheses.

5.5 Limitations and Suggestions for Future Research

Despite substantial contributions highlighted in this study regarding ECO, it has several limitations which need to be recognised. First, CMB is one of the possible limitations of this study (Podsakoff et al., 2003). Notwithstanding, using Harman's single factor analysis to assess CMB, it shows that this study is free from method bias. Nonetheless, future research can collect data from multiple stakeholders (students, lecturers, HEIs, government) separately per polytechnic which can lessen the effect of measurement error.

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Secondly, the study paid attention to polytechnics in Northwestern Nigeria. Notwithstanding, polytechnics in Nigeria tend to have similarities regarding entry requirements, curriculum, regulatory environment etc. Notwithstang, the result achieved may be slightly dissimilar if other geopolitical zones had been included in the study. Therefore, the result of this should be generalised with caution to polytechnics in other parts of Nigeria. Also, while this research targeted all types of polytechnics, there is need to assess ECO based course specialisation such as engineering, business, art and design, food technology, office technology management, building technology, quantity survey, computer engineering, and many more. Thus, the study is limited by paying no attention to the fact that ECO may differ from one course to another. Future studies should consider assessing ECO among students based on courses or programme of study in polytechnics which may produce more refined results.

Thirdly, this study used the quantitative method and relied on one process of data collection. Specifically, a questionnaire was the only instrument used in gathering data for this study. A problem with this method is that respondents may be reluctant to supply the relevant information to the researcher. Also, respondents may be unwilling to answer questions correctly. Hence, the study may not be accurate and consistent in explaining the study constructs. Future studies may wish to combine qualitative and quantitative techniques to perform an in-depth investigation into ECO among polytechnic students in Northwestern Nigeria.

Fourthly, this study utilised cross-sectional research design for the survey where the opinion of respondents was taken at one point in time. Therefore, due to the cross-sectional nature of the study, it was restricted to proving a causal relationship between the study's constructs (Sekaran & Bougie, 2010). Since the data was collected at one point in time, it denies the data to represent the long-term behaviour of the students. Consequently, tracer study is recommended for future research. A tracer study will help the researcher to get a clear understanding of the subject matter and validate results from cross-sectional studies.

In addition, another notable limitation of the current study relates to the measures of the variables used in the research. The study assessed all variables in this study as one-dimensional constructs. However, variables such as ECO, CRT etc. can give more information if considered as multi-dimensional. Therefore, a future inquiry into the relationship between these variables and ECO using multi-dimension scale is a potential research area.

5.6 Conclusion

The primary objective of this research study is to assess the mediating effect that creativity has on the relationship between know-what, know-how, know-who, know-why, know-when and entrepreneurial career option among polytechnic students in Northwestern Nigeria. This research work has achieved all the three objectives outlined in the first chapter.

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The first study objective is to assess the influence of KWT, KHW, KWO, KWY, and KWN on ECO among polytechnic students in Northwestern Nigeria. This study realised its objectives by evaluating five direct relationship hypotheses. The study provides empirical proof of the significant positive relationship between KWT, KHW, KWO, KWY, KWN and ECO. The second study objective is to investigate the relationship between KWT, KHW, KWO, KWY, KWN, ECO and CRT among polytechnic students in Northwestern Nigeria. Six hypotheses were assessed to achieve this objective. Empirical evidence indicates that KWT, KHW, KWO, KWY, KWN, ECO have positive influence on CRT. The third and final study objective is to investigate the mediating effect of creativity on the relationship between KWT, KHW, KWO, KWY, KWN and ECO among polytechnic students in Northwestern Nigeria. Equally, the study attained the mediation objective by examining the mediation hypotheses. The result indicates that creativity plays a mediation role in the relationship between KWT, KWO, KWY, KWN and ECO.

Furthermore, the study offers theoretical, methodological, practical contributions in the area of influence of components of EE on entrepreneurial career option. The future direction of research was highlighted based on the limitations of this study. Decisively, this study has added valuable implications, regarding theory, methodology, and practice of ECO literature.

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Appendix A
Questionnaire

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SURVEY QUESTIONNAIRE

Research Title: Entrepreneurship education and entrepreneurial career option among polytechnic students in Northwestern Nigeria: the mediating effect of creativity.

Objective: To investigate the mediating effect of creativity on the relationship between entrepreneurship education and entrepreneurial career option of polytechnic students in Northwestern Nigeria.

Target: HND II students of Polytechnics in Northwestern Nigeria.

Dear Respondent,

I am a PhD Entrepreneurship research fellow in the above-named university, currently conducting a survey on the above titled research. The following are self-explanatory questions that will not take much of your time to answer. Your kind and objective response would be appreciated by providing objective and sincere answers to all the questions. There is no right or wrong answer to the questions. Your identity and the information supplied will be used for the purpose of the research only. Your response will be treated as strictly confidential.

Please, refer to the researcher any enquiry about the research.

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Part I: Demographic Data

Information about the personal profile of the respondents. Please Tick (√) in the box relevant to you.

A. Gender
[ ] Male
[ ] Female

B. Age
[ ] Less than 20 years, [ ] 20-29yrs, [ ] 30-39yrs, {] 40-49yrs, [ ] 50yrs and above

C. Marital Status

[ ] Married, [ ] Single, [ ] Widowed, [ ] Divorced

D. Previous work experience
[ ] Employed   [ ] Unemployed   [ ] Self-employed

E. If self-employed, how long have you been in business?
[ ] Young entrepreneur: Less than 3 years,
[ ] Old entrepreneur: 3-5 years,
[ ] Old entrepreneur: 6-10 years
[ ] Old entrepreneur: 11 years and above.

Part II: Entrepreneurial career option (ECO)

Please rate the following items according to their perceived relevance in your decision to run your own business venture. Respondents are expected to make a "tick" in appropriate box for all responses, on a continuum of 7 points; in front of each of the under listed activities.

      1.   Strongly Disagree
      2.   Moderately Disagree
      3.   Disagree
      4.   Neutral
      5.   Agree
      6.   Moderately Agree
      7.   Strongly agree

CODE	Statement	Strongly Disagree					Strongly Agree	
ECO1	I trust my own instincts when solving entrepreneurial problems.	1	2	3	4	5	6	7
ECO2	I believe in trial and error to solve problems rather than give up.	1	2	3	4	5	6	7
ECO3	I have faith in success in my future career.	1	2	3	4	5	6	7
ECO4	I have experiences that	1	2	3	4	5	6	7

	strengthen my imaginations.							
ECO5	My instincts help me to work out entrepreneurial problems.	1	2	3	4	5	6	7
ECO6	The probability of doing well in the business is high.	1	2	3	4	5	6	7
ECO7	There is less uncertainty when predicting how well I do with the business introduction.	1	2	3	4	5	6	7
ECO8	The overall riskiness of the venture is low.	1	2	3	4	5	6	7
ECO9	The overall option of introducing the business is something positive to me.	1	2	3	4	5	6	7
ECO10	Introducing the business is considered as potential gain to me.	1	2	3	4	5	6	7
ECO11	Introducing the business will have positive effect on my own future.	1	2	3	4	5	6	7
ECO12	There is high probability of losing a great deal of money by introducing the business.	1	2	3	4	5	6	7
ECO13	I shall be an entrepreneur to increase my personal income.	1	2	3	4	5	6	7
ECO14	I shall be an entrepreneur to acquire personal wealth.	1	2	3	4	5	6	7
ECO15	I shall be an entrepreneur to be self-employed.	1	2	3	4	5	6	7
ECO16	I shall be an entrepreneur to control my destiny.	1	2	3	4	5	6	7
ECO17	I shall be an entrepreneur to acquire personal security.	1	2	3	4	5	6	7
ECO18	I shall be an entrepreneur to recognise and exploit opportunities.	1	2	3	4	5	6	7
ECO19	I shall be an entrepreneur to develop new ideas.	1	2	3	4	5	6	7
ECO20	I shall be an entrepreneur to develop innovative abilities.	1	2	3	4	5	6	7
ECO21	I shall be an entrepreneur to develop my initiatives.	1	2	3	4	5	6	7
ECO22	I shall be an entrepreneur to respond to change in the environment.	1	2	3	4	5	6	7
ECO23	I believe I can establish a position in the product market	1	2	3	4	5	6	7
ECO24	I believe I can develop new business ideas.	1	2	3	4	5	6	7
ECO25	I believe I can develop strategic plans.	1	2	3	4	5	6	7
ECO26	I believe I am good at making	1	2	3	4	5	6	7

CODE	Statement	Strongly Disagree						Strongly Agree
	decisions involving uncertainty and risk.							
ECO27	I believe I can develop my own financial systems.	1	2	3	4	5	6	7
ECO28	I believe I can develop my own internal controls.	1	2	3	4	5	6	7

Part III: Components of entrepreneurship education

Know-what

To what extent do you agree or disagree with the learning from entrepreneurial courses? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree						Strongly Agree
KWT1	The entrepreneurial courses increase my understanding of generating innovative ideas.	1	2	3	4	5	6	7
KWT2	The entrepreneurial courses increase my understanding of environmental assessment of entrepreneurial ventures.	1	2	3	4	5	6	7
KWT3	The entrepreneurial courses increase my understanding of financial preparation for entrepreneurial ventures.	1	2	3	4	5	6	7
KWT4	The entrepreneurial courses increase my understanding of planning a business.	1	2	3	4	5	6	7
KWT5	The entrepreneurial courses increase my understanding of market and feasibility studies for new entrepreneurial ventures.	1	2	3	4	5	6	7

Know-how

To what extent do you agree or disagree with the learning from entrepreneurial courses? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree						Strongly Agree
KHW1	The entrepreneurial courses enhance my skills to develop a good business plan.	1	2	3	4	5	6	7
KHW2	The courses enhance my skills to handle an entrepreneurship project.	1	2	3	4	5	6	7
KHW3	The entrepreneurial courses enhance my skills to deal with the risks and uncertainties.	1	2	3	4	5	6	7
KHW4	The entrepreneurial courses enhance my skills to allocate resources (e.g., money, personnel,	1	2	3	4	5	6	7

	time etc.).							
KHW5	The entrepreneurial courses enhance my ability to identify and exploit a business opportunity.	1	2	3	4	5	6	7

Know-who

To what extent do you agree or disagree with the learning from entrepreneurial courses? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree						Strong Agree
KWO1	The entrepreneurial courses enhance my ability to develop networks (e.g., obtaining useful advice/information from lecturers, guest speakers or classmates).	1	2	3	4	5	6	7
KWO2	The free atmosphere among students in the entrepreneurship classes inspire my entrepreneurial mind.	1	2	3	4	5	6	7
KWO3	Views of the lecturers inspire my entrepreneurial mind.	1	2	3	4	5	6	7
KWO4	Views of external speakers inspire my entrepreneurial mind.	1	2	3	4	5	6	7
KWO5	Success stories of local entrepreneurs inspire my entrepreneurial mind.	1	2	3	4	5	6	7
KWO6	Shared entrepreneurial experiences with real entrepreneurs enhances my understanding of entrepreneurial process.	1	2	3	4	5	6	7

Know-why

To what extent do you agree or disagree with the learning from entrepreneurial courses? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree						Strongly Agree
KWY1	The entrepreneurial courses increase my understanding of the attitudes of entrepreneurs (i.e., how they view entrepreneurship and why they act).	1	2	3	4	5	6	7
KWY2	The entrepreneurial courses increase my understanding of the importance of entrepreneurship to the society.	1	2	3	4	5	6	7
KWY3	The entrepreneurial courses increase my understanding of the importance of entrepreneurship to the individual.	1	2	3	4	5	6	7
KWY4	The entrepreneurial courses increase my understanding of the personal	1	2	3	4	5	6	7

		Strongly Disagree					Strongly Agree	
	characteristics of entrepreneurs (e.g., risk-taking, innovation, etc.).							
KWY5	The entrepreneurial courses gives me a sense that entrepreneurship is achievable.	1	2	3	4	5	6	7
KWY6	The entrepreneurial courses increases my understanding of the motives of engaging in entrepreneurial activities (e.g., money, self-achievement, social status, etc.).	1	2	3	4	5	6	7

Know-when

To what extent do you agree or disagree with the learning from entrepreneurial courses? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree					Strongly Agree	
KWN1	The entrepreneurial courses encourage me to refer to my instincts before making final decision.	1	2	3	4	5	6	7
KWN2	The entrepreneurial courses encourage me to put all the pieces together when working on a problem.	1	2	3	4	5	6	7
KWN3	The entrepreneurial courses encourage me to rest over an issue before making final decision.	1	2	3	4	5	6	7
KWN4	The entrepreneurial courses encourage me to rely on instincts in my areas of expertise than areas I do not know well.	1	2	3	4	5	6	7
KWN5	The entrepreneurial courses encourages me to trust my intuitions in areas which I have much knowledge or experience.	1	2	3	4	5	6	7

Part IV: Creativity

To what extent do you disagree or agree with statement about your experience to engage in entrepreneurship? Please tick one box only for each statement.

CODE	Statement	Strongly Disagree					Strongly Agree	
ICR1	I often make discoveries through trial and error.	1	2	3	4	5	6	7
ICR2	I often trust my hunches.	1	2	3	4	5	6	7
ICR3	I often have ideas arising whilst dreaming.	1	2	3	4	5	6	7
ICR4	I am a methodical and systematic problem	1	2	3	4	5	6	7

	solving person.							
ICR5	I often have sudden moments of inspiration in waking life.	1	2	3	4	5	6	7
ICR6	I often have a sense of communicating with a deeper sense of self.	1	2	3	4	5	6	7
ICR7	I often rational and logical in thought.	1	2	3	4	5	6	7
ICR8	I often careful in the selection of ideas.	1	2	3	4	5	6	7
ICR9	I often have moments of loose, playful, and unconstrained thinking.	1	2	3	4	5	6	7
ICR10	I often follow my intuitions.	1	2	3	4	5	6	7
ICR11	I often have ideas arising as falling asleep or waking up.	1	2	3	4	5	6	7
ICR12	I often pay attention to visual imagery.	1	2	3	4	5	6	7
ICR13	I often experience losing track of time when involved in creative work.	1	2	3	4	5	6	7
ICR14	I often play with ideas.	1	2	3	4	5	6	7
ICR15	I often have instance of luck, chance, and fortunate accidents.	1	2	3	4	5	6	7
ICR16	I often use analogy.	1	2	3	4	5	6	7
ICR17	I often have a sense of purpose that seems to come from beyond the self.	1	2	3	4	5	6	7
ICR18	I often recombine existing elements in new ways.	1	2	3	4	5	6	7
ICR19	I often work with a set goals or outcomes in mind.	1	2	3	4	5	6	7
ICR20	I often have a sense of channelling information.	1	2	3	4	5	6	7
ICR21	I often pay attention to auditory impressions.	1	2	3	4	5	6	7
ICR22	I often engage in day dreaming.	1	2	3	4	5	6	7
ICR23	I often release of negative emotions.	1	2	3	4	5	6	7
ICR24	I often use non-verbal modes of thinking.	1	2	3	4	5	6	7
ICR25	I often have positive emotions, e.g. joy, excitement, euphoria.	1	2	3	4	5	6	7
ICR26	I often pay attention to bodily feelings.	1	2	3	4	5	6	7
ICR27	I often have a sense of communicating with something else.	1	2	3	4	5	6	7
ICR28	A sense of being in tune with nature or the universe.	1	2	3	4	5	6	7

Thank you.

Appendix B

Treatment of Outlier

S/N	CASE	MAHALANOBIS D^2
1	7	137.199
2	16	147.027
3	33	134.572
4	39	147.608
5	40	133.278
6	41	136.264
7	43	139.217
8	45	170.201
9	46	170.747
10	50	142.830
11	51	170.259
12	52	175.867
13	53	196.712
14	68	167.534
15	89	172.738
16	104	231.678
17	111	144.869
18	113	151.151
19	114	147.093
20	141	129.071
21	142	134.264
22	143	131.222
23	148	159.832
24	165	138.599
25	173	133.684
26	178	139.525
27	186	209.298
28	193	197.547
29	200	163.104
30	201	140.803
31	203	198.775
32	206	142.043
33	266	200.759
34	267	168.482
35	274	141.741
36	275	138.192
37	276	147.171
38	317	175.134
39	321	130.561
40	327	147.854
41	330	137.801

42	334	187.086
43	337	180.122
44	340	136.943
45	345	161.626
46	351	132.180
47	356	181.545
48	362	142.051
49	375	203.430
50	376	215.737
51	383	144.183
52	385	141.321
53	387	130.070
54	400	149.509
55	401	195.660
56	402	203.665
57	405	185.603
58	406	151.232
59	409	161.058
60	413	135.702
61	415	134.610
62	416	142.752
63	417	151.541
64	418	179.274
65	420	203.148
66	425	160.326

POLYTECHNIC ENROLMENT SUMMARY BY INSTITUTIONS: 2014/2015

SNo	Institution	Location	Pre-ND		ND 1		ND 2		RD 3		HND 1		HND 2		HND 3		Total		
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	MF
1	Abdu Gusau Polytechnic Talata Mafara	Zamfara	90	35	378	113	419	116	0	0	250	70	287	71	0	0	1424	405	1829
2	Abia State Polytechnic Aba	Abia	0	0	756	847	892	575	0	0	505	805	454	579	0	0	2407	2406	4813
3	Abraham Adesanya Polytechnic, Ijebu Igbo	Ogun	0	0	298	300	226	232	0	0	27	53	29	42	0	0	580	627	1207
4	Abubakar Tatari Ali Polytechnic Bauchi	Bauchi	0	0	1990	381	1412	416	0	0	0	0	0	0	0	0	3402	797	4199
5	Adamawa State Polytechnic Yola	Adamawa	151	58	550	186	412	139	0	0	11	3	11	2	0	0	1135	398	1533
6	Akanu Ibiam Federal Polytechnic Unwana, Afikpo	Ebonyi	38	33	752	479	637	376	0	0	659	401	580	289	0	0	2666	1578	4244
7	Akwa Ibom State College of Arts and Science, Nung Ukim	Akwa Ibom	0	0	43	30	38	47	0	0	0	0	0	0	0	0	81	77	158
8	Akwa Ibom State Polytechnic Ikot Osurua	Akwa Ibom	0	0	993	846	874	694	0	0	304	425	230	438	0	0	2401	2403	4804
9	Allover Central Polytechnic Ota	Ogun	0	0	30	33	72	60	0	0	32	44	37	36	0	0	171	173	344
10	Auchi Polytechnic Auchi	Edo	0	0	4915	3402	2944	2703	0	0	2516	2205	1408	1330	0	0	11783	9640	21423
11	Bayelsa State College of Arts and Science, Elebele	Bayelsa	0	0	37	31	35	11	0	0	0	0	0	0	0	0	72	42	114
12	Benue State Polytechnic, Ugbokolo	Benue	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0

13	College of Technology, Iresi	Osun	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
14	Covenant Polytechnic, Aba	Abia	0	0	107	69	117	73	0	0	46	21	12	6	0	0	282	169	451
15	Crown Polytechnic, Ado-Ekiti	Ekiti	0	0	358	227	386	248	0	0	83	50	83	57	0	0	910	582	1492
16	D.S. Adegbenro ICT Polytechnic, Itori-Ewekoro,	Ogun	0	0	169	128	175	133	0	0	0	0	0	0	0	0	344	261	605
17	Delta State Polytechnic Ogwashukwu	Delta	0	0	718	590	551	454	0	0	434	416	406	381	0	0	2109	1841	3950
18	Delta State Polytechnic Otefe	Delta	0	0	413	306	304	245	0	0	288	234	273	214	0	0	1278	999	2277
19	Delta State Polytechnic Ozoro	Delta	0	0	1220	932	1041	828	352	285	499	403	425	358	125	112	3662	2918	6580
20	Dorben Polytechnic, Abuja	FCT	0	0	117	119	220	182	0	0	75	66	94	74	0	0	506	461	967
21	Edo State Institute of Technology and Management, Usen	Edo	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
22	Federal Polytechnic Ado Ekiti	Ekiti	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	0	0	0
23	Federal Polytechnic Bauchi	Bauchi	0	0	2323	938	1812	991	0	0	1149	591	1346	623	0	0	6630	3143	9773
24	Federal Polytechnic Bida	Niger	35	12	1372	679	1107	579	0	0	702	444	628	261	0	0	3844	1975	5819
25	Federal Polytechnic Damaturu	Yobe	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	0	0	0
26	Federal Polytechnic Ede	Osun	82	43	1726	1131	1152	1018	304	250	580	436	519	414	0	0	4363	3292	7655
27	Federal Polytechnic Idah	Kogi	0	0	943	515	115	654	0	0	779	384	817	371	0	0	3654	1924	5578

28	Federal Polytechnic Ilaro	Ogun	0	0	1714	1481	1523	1411	0	0	412	485	525	478	0	0	4174	3855	8029
29	Federal Polytechnic K/Namoda	Zamfara	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	0	0	0
30	Federal Polytechnic Mubi	Adamawa	85	27	1762	848	2340	1100	0		226	139	457	269	0	0	4872	2383	7255
31	Federal Polytechnic Nassarawa	Nasarawa	0	0	975	664	1015	805	0	0	420	347	622	458	0	0	3032	2274	5306
32	Federal Polytechnic Nekede	Imo	0	0	2189	2109	1904	1704	0	0	624	920	787	811	0	0	5504	5544	11048
33	Federal Polytechnic Offa	Kwara	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	0	0	0
34	Federal Polytechnic Oko	Anambra	0	0	889	863	797	849	0	0	790	801	714	776	0	0	3190	3289	6479
35	Federal Polytechnic, Bali	Taraba	72	26	272	109	251	110	0	0	0	0	0	0	0	0	595	245	840
36	Federal Polytechnic, Ekowe	Bayelsa	0	0	3	1	71	6	0	0	0	0	0	0	0	0	74	7	81
37	Fidei Polytechnic, Gboko	Benue	0	0	375	221	334	201	0	0	174	164	121	136	0	0	1004	722	1726
38	Gateway ICT Polytechnic, Sapade	Ogun	0	0	326	367	260	307	0	0	109	69	87	58	0	0	782	799	1581
39	Grace Polytechnic Surulere-lagos	Lagos	0	0	168	132	156	191	0	0	13	10	14	11	0	0	351	344	695
40	Hassan Usman Katsina Polytechnic Katsina	Katsina	479	53	1172	182	1214	261	0	0	296	46	411	47	0	0	3572	589	4161
41	Heritage Polytechnic, Ikot Udota, Eket	Akwa Ibom	0	0	415	403	323	369	0	0	441	487	200	247	0	0	1379	1506	2885
42	Hussaini Adamu Polytechnic Kazaure	Jigawa	0	0	139	48	171	36	0	0	6	3	13	6	0	0	329	93	422

No	Institution	State																
43	Ibarapa Polytechnic, Eruwa	Oyo	0	0	389	248	380	237	0	0	0	0	0	0	0	0	769	485	1254
44	Igbajo Polytechnic, Igbajo	Osun	0	0	109	95	95	97	0	0	18	17	13	11	0	0	235	220	455
45	Imo State Polytechnic, Umuagwo, Ohaji	Imo	0	0	266	333	213	220	0	0	237	157	231	153	0	0	947	863	1810
46	Institute of Management Technology Enugu	Enugu	0	0	946	866	898	877	0	0	629	887	616	859	0	0	3089	3469	6578
47	Interlink Polytechnic, Ijebu-Jesa	Osun	0	0	121	71	107	85	0	0	0	0	0	0	0	0	228	156	384
48	Jigawa State Polytechnic, Dutse	Jigawa	0	0	405	36	367	54	0	0	108	43	122	14	0	0	1002	147	1149
49	Kaduna Polytechnic Kaduna	Kaduna	0	0	3591	1875	2433	1547	0	0	1772	1182	2167	1551	0	0	9963	6155	16128
50	Kano State Polytechnic Kano	Kano	511	183	2438	670	2045	660	0	0	997	232	987	286	0	0	6978	2031	9009
51	Kings Polytechnic, Ubiaja	Edo	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
52	Kogi State Polytechnic Lokoja	Kogi	157	108	943	524	738	486	180	148	552	387	478	344	117	88	3165	2085	5250
53	Kwara State Polytechnic Ilorin	Kwara	0	0	291	349	323	363	0	0	458	356	304	409	0	0	1376	1477	2853
54	Lagos City Polytechnic Ikeja	Lagos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
55	Lagos State Polytechnic Ikorodu	Lagos	0	0	3787	2567	3223	3154	0	0	3380	2161	1739	1677	0	0	12129	9559	21688
56	Lighthouse Polytchnic, Benin	Edo	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
57	Mai Idris Alooma Polytechnic, Geidam	Yobe	0	0	356	89	360	79	0	0	0	0	0	0	0	0	716	168	884

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No	Name	State																	Total	
58	Moshood Abiola Polytechnic Abeokuta	Ogun	0	0	855	524	607	447	0	0	460	375	401	361	0	0	2523	1707	4230
59	Nacabs Polytechnic, Aloranga	Nasarawa	0	0	137	82	134	82	0	0	0	0	0	0	0	0	271	164	435
60	Nasarawa State Polytechnic Lafia	Nasarawa	0	0	1959	1444	2135	1584	0	0	62	34	40	29	0	0	4196	3091	7287
61	Niger State Polytechnic Zungeru	Niger	0	0	561	211	589	171	0	0	312	127	317	132	0	0	1779	641	2420
62	Niogak Polytechnic, Ikom, Cross River State	Cross River	0	0	0	0	96	26	0	0	0	0	0	0	0	0	96	26	122
63	Nuhu Bamali Polytechnic Zaria	Kaduna	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
64	Ogun State Institute of Technology, Igbesa	Ogun	0	0	347	245	339	204	0	0	121	85	94	80	0	0	901	614	1515
65	Oke-ogun Polytechnic, Shaki	Oyo	0	0	726	621	698	660	0	0	17	5	19	10	0	0	1460	1296	2756
66	Osun State College of Tech. Esa-Oke	Osun	0	0	570	355	393	246	0	0	508	270	387	230	0	0	1858	1101	2959
67	Osun State Polytechnic Iree	Osun	0	0	775	538	617	438	0	0	935	815	758	689	0	0	3085	2478	5563
68	Our Saviour Institute of Technology Emene-Enugu	Enugu	0	0	134	187	109	155	0	0	109	183	71	200	0	0	423	725	1148
69	Petroleum Institute, Effuru	Delta	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
70	Plateau State Polytechnic B/Ladi	Plateau	0	0	889	481	864	506	0	0	506	354	444	329	0	0	2703	1670	4373
71	Ramat Polytechnic Maiduguri	Borno	0	0	913	369	908	352	0	0	410	115	408	121	0	0	2639	957	3596

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#	Institution	State																	
72	Rivers State Polytechnic Bori	Rivers	0	0	533	418	528	412	0	0	574	374	560	394	0	0	2195	1598	3793
73	Rivers State College of Arts and Science, Portharcourt	Rivers	0	0	98	130	39	54	0	0	0	0	0	0	0	0	137	184	321
74	Ronik Polytechnic Lagos	Lagos	0	0	78	82	68	76	0	0	16	17	15	17	0	0	175	192	367
75	Rufus Giwa Polytechnic Owo	Ondo	0	0	1099	732	965	557	0	0	529	419	509	452	0	0	3102	2160	5262
76	Shaku Polytechnic, Benin City	Edo	0	0	51	42	50	41	0	0	0	0	0	0	0	0	101	83	184
77	Sokoto State Polytechnic, Sokoto	Sokoto	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
78	Taraba State Polytechnic Jalingo	Taraba	484	323	483	319	483	319	0	0	483	319	483	319	0	0	2416	1599	4015
79	Templegate Polytechnic, Aba	Aba	0	0	255	160	178	78	0	0	108	96	64	38	0	0	613	372	985
80	The Ibadan Polytechnic Ibadan	Oyo	0	0	1263	1068	1470	1174	0	0	1308	1068	939	743	0	0	4980	4053	9033
81	The Polytechnic, Ile-Ife	Osun	0	0	101	59	85	61	0	0	69	33	65	37	0	0	320	190	510
82	The Polytechnic, Imasi-Ile	Osun	0	0	28	23	47	35	0	0	0	0	0	0	0	0	75	58	133
83	Tower Polytechnic, Ibadan	Oyo	0	0	32	22	33	22	0	0	0	0	0	0	0	0	65	44	109
84	Uyo City Polytechnic, Uyo	Akwa Ibom	0	0	184	152	0	0	0	0	0	0	0	0	0	0	184	152	336
85	Waziri Umaru Polytechnic B/Kebbi	Kebbi	0	0	865	352	843	337	0	0	757	306	721	297	0	0	3186	1292	4478
86	Wolex Polytechnic Iwo	Osun	0	0	86	71	73	61	0	0	20	15	0	0	0	0	179	147	326

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87	Yaba College of Technology Yaba	Lagos	0	0	3400	2625	3447	2757	1434	1181	1358	976	1285	791	250	206	11174	8537	19711
88	Zamfara State College of Arts and Science, Gusau	Zamfara	0	0	24	6	28	2	0	0	0	0	0	0	0	0	52	8	60
	Total		2184	911	60793	38552	53308	36838	2270	1854	29263	21760	25827	19414	492	406	174047	119745	293792

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NATIONAL BOARD FOR TECHNICAL EDUCATION

POLYTECHNIC ENROLMENT SUMMARY BY INSTITUTIONS IN NORTHWEST GEOPOLITICAL ZONE, NIGERIA: 2014/2015

S/No	Institution	Location	Pre-ND		ND 1		ND 2		ND 3		HND 1		HND 2		HND 3		Total		
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	MF
1	Abdu Gusau Polytechnic Talata Mafara	Zamfara	90	35	378	113	419	116	0	0	250	70	287	71	0	0	1424	405	1829
2	Federal Polytechnic K/Namoda	Zamfara	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	0	0	0
3	Hassan Usman Katsina Polytechnic Katsina	Katsina	479	53	1172	182	1214	261	0	0	296	46	411	47	0	0	3572	589	4161
4	Hussaini Adamu Polytechnic Kazaure	Jigawa	0	0	139	48	171	36	0	0	6	3	13	6	0	0	329	93	422
5	Jigawa State Polytechnic, Dutse	Jigawa	0	0	405	36	367	54	0	0	108	43	122	14	0	0	1002	147	1149
6	Kaduna Polytechnic Kaduna	Kaduna	0	0	3591	1875	2433	1547	0	0	1772	1192	2167	1551	0	0	9963	6165	16128
7	Kano State Polytechnic Kano	Kano	511	183	2438	670	2045	660	0	0	997	232	987	286	0	0	6978	2031	9009
8	Nuhu Bamali Polytechnic Zaria	Kaduna	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
9	Sokoto State Polytechnic, Sokooto	Sokoto	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0
10	Wazri Umaru Polytechnic B/Kebbi	Kebbi	0	0	865	352	843	337	0	0	757	306	721	297	0	0	3186	1292	4478
11	Zamfara State College of Arts and Science, Gusau	Zamfara	0	0	24	6	28	2	0	0	0	0	0	0	0	0	52	8	60
	Total		1080	271	9012	3282	7520	3013	0	0	4186	1892	4708	2272	0	0	26506	10730	37236

NATIONAL BOARD FOR TECHNICAL EDUCATION

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21st December, 2017

Mallam Umar,
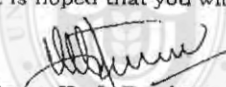UUM, University,
Malaysia.

RE: REQUEST FOR STATISTICAL DATA OF STUDENT ENROLMENT AND OUT-TURN.

Above subject refers.

Please find attached herewith, 2013/14 and 2014/15 statistical data on student enrolment by in the polytechnics in Nigeria, by institution, levels of study and gender, as requested.

It is hoped that you will find them useful for your purpose.

Engr. U. J. Danjuma
DAPRS/ICT

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Appendix D

Harman's Single Factor

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	25.335	30.524	30.524	25.335	30.524	30.524
2	6.318	7.612	38.136	6.318	7.612	38.136
3	3.246	3.911	42.046	3.246	3.911	42.046
4	2.265	2.729	44.775	2.265	2.729	44.775
5	2.076	2.501	47.276	2.076	2.501	47.276
6	1.824	2.197	49.473	1.824	2.197	49.473
7	1.627	1.960	51.433	1.627	1.960	51.433
8	1.569	1.890	53.324	1.569	1.890	53.324
9	1.463	1.763	55.086	1.463	1.763	55.086
10	1.407	1.695	56.781	1.407	1.695	56.781
11	1.266	1.525	58.306	1.266	1.525	58.306
12	1.169	1.409	59.715	1.169	1.409	59.715
13	1.162	1.400	61.115	1.162	1.400	61.115
14	1.113	1.342	62.456	1.113	1.342	62.456
15	1.090	1.314	63.770	1.090	1.314	63.770
16	1.060	1.277	65.047	1.060	1.277	65.047
17	1.023	1.233	66.280	1.023	1.233	66.280
18	1.014	1.221	67.502	1.014	1.221	67.502
19	.974	1.174	68.676			
20	.926	1.115	69.791			
21	.870	1.048	70.839			
22	.839	1.011	71.850			
23	.806	.971	72.822			
24	.754	.908	73.730			
25	.747	.900	74.629			
26	.737	.888	75.517			
27	.712	.858	76.375			
28	.702	.845	77.220			

29	.681	.821	78.041
30	.669	.806	78.847
31	.642	.774	79.621
32	.623	.750	80.371
33	.600	.722	81.093
34	.581	.700	81.794
35	.570	.687	82.481
36	.557	.671	83.152
37	.548	.660	83.812
38	.526	.634	84.446
39	.521	.628	85.074
40	.499	.601	85.675
41	.477	.575	86.250
42	.463	.558	86.808
43	.446	.538	87.345
44	.435	.524	87.870
45	.431	.520	88.389
46	.418	.503	88.892
47	.408	.491	89.383
48	.402	.484	89.867
49	.394	.474	90.342
50	.371	.447	90.789
51	.360	.434	91.223
52	.356	.429	91.652
53	.350	.422	92.075
54	.331	.399	92.473
55	.323	.389	92.862
56	.319	.384	93.246
57	.308	.371	93.617
58	.300	.361	93.979
59	.297	.358	94.337

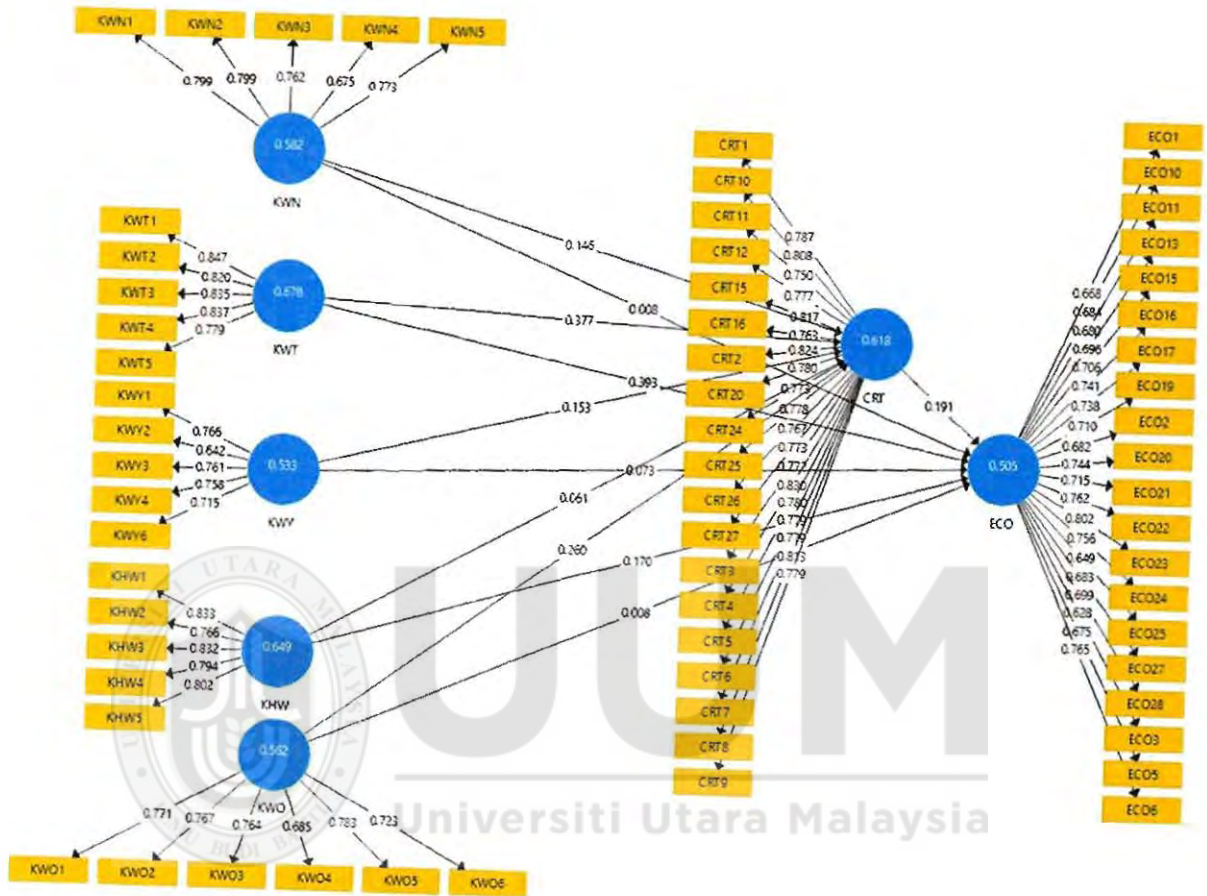|			
60	.281	.339	94.675
61	.276	.333	95.008
62	.267	.322	95.330
63	.261	.315	95.644
64	.256	.308	95.953
65	.255	.307	96.260
66	.240	.289	96.548
67	.233	.281	96.830
68	.222	.268	97.098
69	.211	.254	97.352
70	.201	.243	97.595
71	.200	.241	97.836
72	.188	.227	98.063
73	.182	.219	98.282
74	.171	.206	98.488
75	.167	.201	98.689
76	.156	.188	98.877
77	.149	.180	99.057
78	.141	.170	99.226
79	.139	.167	99.394
80	.133	.161	99.554
81	.128	.155	99.709
82	.123	.149	99.857
83	.118	.143	100.000

Appendix E

Measurement Model

Figure 4.2
Measurement Model