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Technopreneurship and Growth of New Tech Companies in Nigeria

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Abstract: *Technopreneurship is a major engine of technology advancement of any nation. Its role in economic growth and development cannot be overemphasized. Therefore, this study investigates the relationship between Technopreneurship and the growth of new tech companies in Nigeria. It is aimed at proffering solutions to the poor supply of technopreneurship in Nigeria. The cross-sectional survey method of the quasi-experimental research design was adopted for this study. A population of 376 was obtained for this study, a sample size of 132 was obtained using the Taro Yamen formula. A well-structured research questionnaire was used as an instrument to gather information from the respondents. A simple random sampling technique was used to collect information from 132 respondents out of which 110 questionnaires were deemed useful for the study. The method of data analysis was the use of Spearman rank-order correlation coefficient. A major finding of this work reveals that there is a strong agreement among respondents that technopreneurship via ICT self-efficacy, adaptability, and innovation increases the growth of tech companies in Nigeria. Among the recommendation are that technopreneurs should strive to acquire ICT skills, and be able to adapt to technological changes while providing innovative products, software, and solutions to global problems.*

Keywords: *Technoperneurship, Technodaptability, Self-Efficacy, Market Penetration, Innovation*

Introduction

The global entrepreneurial revolution continues to gain momentum, as firms and countries continue to leverage on the benefits and opportunities entrepreneurship provide in building and developing economies around the world. The internet has created an array of opportunities and businesses as technopreneurs and tech businesses occupy seven of top ten businesses in the world Adeoti (2019). Nigeria has had its fair share of tech startups as millions of dollars have been racked into the economy as a result of technological invention and innovation which has made huge appearance on the global stage.

Technopreneurship is very important because it leads to increased economic efficiency, bringing innovation to the market, creating new jobs, and maintaining job levels. The technoprenuership encouragement has also taken place in certain cities in the world. International IT companies have since embarked on encouraging new tech companies and tech startups, countries are building tech hubs that encourage entrepreneurs to get involved in information technology-related activities or some cases other forms of hi-tech activities. These tech hubs are solely devoted to the development of technopreneurs (Koe, Alias, Ismail, & Mahphoth, 2018; Harlanu & Nugroho, 2015; Machmud, Suwatno, Nurhayati, Aprilianti, & Fathonah, 2019). Although there is evidence of such tech hubs as the computer village in Lagos, Riv-Tech Creek in Rivers State, Leadspace in Abuja, and some other parts of Nigeria. They are there without government support. The importance of technoprenuership development and the use of technology cannot be overemphasized as it is aimed at increasing productivity, efficiency, and customer service (Prasetyo & Sutopo, 2017; Gilchrist, 2016)

The link between technology, entrepreneurship, and the ensuing growth of Micro, Small, and Medium Enterprises (MSMEs) in a given economy has long been accorded a prime place in business, management, and economic sciences literature. Reflecting on globalization and how it has raised the importance of creative high-tech and entrepreneurial skills; technopreneurship has become an answer to unlock creativity and sustain long-run competitive advantage in the present world where economic issues have combined with increased competitiveness (Hafezieh et al. 2011; Ngoasong 2015). Subsequently, this need to combine the quest and requirement for technology with all elements of entrepreneurship led to the development of the term "technopreneurship" which refers to new or prospective enterprises that are anchored on technology. Nigeria as a developing nation has for long explored and formulated policy structures and strategies to promote technology-based new venture growth and to offer a promising future within the global marketplace (Adeoti, 2019).

The conception and progress of technopreneurship are subject to various issues. According to Okorie, Kwa, Olusunle, Akinyanmi, and Momoh (2014), the method of organizational creativity is a procedure of mainstreaming innovation in solving multiple complications and implementing the solutions to satiate the global market. Also, it emphasizes mixing technology with entrepreneurship. Most technopreneurs venture into businesses that are technology grounded because they make use of advanced technology to come up with ground-breaking products through the act of commercialization (Alahakoon & Somaratne, 2018a). Potentially, these technopreneurs are armed with technical skills that are needed to flourish the business. The term technopreneurs can therefore be discussed as technology-based entrepreneurs who mix the factors of production and their entrepreneurial skills with technology expertise to set up viable business opportunities, Dutse, Ningi, and Abubakar (2013).

Technopreneurship is, by large, entrepreneurship. The difference is that technopreneurship is involved in providing an innovative hi-tech product in an advanced way to supply its product (Aldrich & Jennings, 2003; Tung, 2011). New tech companies are globally acknowledged as important factors required for the socio-economic transformation of any nation, Kamarudin, and Sajilan (2013). In the case of Nigeria, new tech companies are strategically positioned to absorb up to 80% of jobs, improve per capita income, increase value addition to raw materials supply, and step up capacity utilization in key industries. Anchored on the above ground, this study was

conducted to provide credible and reliable insights into the dynamics of the factors that may be responsible for the growth and development of the sector in Nigeria.

Statement of the problem

The significance of technoprenuership in any nation cannot be overemphasized. They are important in the technology's advancement of every nation which in turn brings in employment generation for the timing unemployed graduated in the third world country like Nigeria. Nigeria had been saddled with a poor supply of Technoprenuership. This had been adjudged to be so as a result of inadequate technical know-how when compared with the happening in the advanced economy (Sjoer, & Goossens 2014). Nigeria had been a developing nation saddled with lots of constraints factors that are responsible for its underdevelopment. Technoprenuership needs to be increased in Nigeria so that employment generation can be achieved and the living standard of the masses improved (Wang, 2014).

In Nigeria, the tech eco-system appears to be experienced challenges that affect their growth, this is quite unfortunate as numerous societal problems in Nigerian can be tackled by the growth of tech firms. Furthermore, several issues such as poor infrastructure, poor skills base, limited access to finance, limited access to market, low absorption of research and technology, and inadequate power supply (Dutse, Ningi, & Abubakar, 2013) are also inhibiting the progress of technopreneurs in the country. Future technopreneurs need to be well equipped to survive in the challenging Nigerian business environment.

The growth and development of new tech companies are very important to the economic development of any nation. However, the tech ecosystem in Nigeria has not reached its full potential; this could be a result of the low level of technopreneurship and growth of new tech companies in Nigeria (Dessyana & Riyanti, 2017; Nwankwere, Akpa, Ojo, et al., 2021). The inception of technopreneurship is usually capital intensive and most of the tech companies in Nigeria lack the technical know-how to introduce advanced technologies to business. Lastly, there have been series of studies on technopreneurship but not even a single study has tried to find the technopreneurship and growth of new tech companies' nexus. It is in this regard that the study is based on the importance of technopreneurship in the growth of new tech companies in Nigeria.

Research Objective

i. Establish the relationship between ICT self-efficacy and market penetration.
ii. Ascertain the relationship between adaptability and market penetration.
iii. Determine the relationship between innovation and market penetration.

Research Question

i. What is the relationship between ICT self-efficacy and market penetration?
ii. What is the relationship between adaptability and market penetration?
iii. Is there a relationship between innovation and market penetration?

Research Hypotheses

Ho_1. There is no significant relationship between ICT self-efficacy and market penetration.

Ho_2. There is no significant relationship between adaptability and market penetration.

Ho_3. There is no significant relationship between innovation and market penetration.

Theoretical Review

Resource-Based Theory

This theory believes that sustainable business performance results from resources that are inimitable, not substitutable, tacit in nature, and synergistic (Al Ansari,2014). The resource-based theory explains the internal sources of a firm's sustained competitive advantage; as such managers need to be able to identify the key resources that drive performance (Kraaijenbrink, Spender & Groen, 2010). Intellectual capital is a resource to improve enterprise growth and it can be human characteristics, knowledge, skills, and capabilities, or organizational technology, processes, patents, and networks, or social links with clients. All of which are important strategic resources/assets which the firm needs to be innovative and increase its competencies and capabilities (Dorf & Byers, 2008; Martinez-Roman, Gamero & Tamayo, 2011).

Also, through continued use, these organizational capabilities, become stronger and more difficult for rivals to imitate and these capabilities are strengthened by continuous research and development and can be used to augment future production possibilities (John, Maurice & Joseph, 2013). According to Teece (2010), the resource-based view suggests that firms are required to encompass resources (i.e., capabilities and competencies) and perform tasks efficiently and expeditiously to capture new opportunities and threats and to meet customer needs by either boosting existing ventures or creating new ventures".

Conceptual Review

Technoprenuership

Technopreneurship is the process that merges technology prowess and entrepreneurial skills. A technopreneur is a person who destroys the existing economic order and takes a step further to introduce new products and services by creating a new form of organization and exploiting new raw materials with the use of technology (Paramasivan, 2016; Adeoti, 2019). The concept of technoprenuership is still new and is considered as a real source of economic power in today's knowledge-based as well as developing economies. A large body of literature exists on the concept of entrepreneurship explaining a variety of views of different scholars on the subject. The consensus on the concept is that it reflects an entrepreneur who combines resources such as land, labor, and capital to produce a product, make non-routine decisions, be aggressively competitive, technologically innovative, and bear risks (Machmud, et al, 2019).

The term technoprenuership, in the context of this study, is used to describe entrepreneurs who combine entrepreneurial skills with technology. They are characterized by Nwankwere, et al, (2021) and Nwaobi (2012) as "technology-based entrepreneurs", "technical entrepreneurs", "high technology entrepreneurs". The importance of technopreneurship can be seen in its high

correlation with technology; it thus can be a significant value driver of national competitive advantage. Technology has transformed the world today; this has made life much easier. Technology is the usage of tools, organizational methods, and systems to solve problems or provide services. Entrepreneurship has developed over the years from entrepreneurship for profitable purposes to social entrepreneurship, the world is now Technopreneurship. Technopreneurship is a combination of technology and entrepreneurial skills (Ajjan, et al, 2019; Moemenam, et al, 2017). Simply put, a Technopreneur is an entrepreneur who is tech-savvy and is using technology for entrepreneurship

Technopreneurship can be considered as a sub-field in entrepreneurship. Selladurai (2016) explained technopreneurship as a process of merging technological expertise and entrepreneurial skills and talents. It is important to note that technopreneurship is a process, in which organizational creativity and innovation are used to solve organizational problems for satisfying economic performance (Fowosire, Idris, & Elijah, 2017). Therefore, technopreneurs could be described as someone who thinks like an engineer and acts like an entrepreneur (Paramasivan & Selladurai, 2017). Jusoh and Halim (2006) explained technopreneurship as technical entrepreneurs or technology-based entrepreneurs who are represented by small and medium enterprises (SMEs), seed level, and start-ups in information and communication technology (ICT) and multimedia sectors. Therefore, it could be said that technopreneurship is the combination of technology and entrepreneurship for economic development and sustainability.

Technopreneurship comprises identifying modern technologies and even the creation of technological opportunities by the presentation of commercial products and services (Blanco, 2007). Technopreneurship is used equally in the newly formed and established enterprises and at the same time to the extent technopreneurship is necessary for enterprises' growth, discrimination, and competitive advantage (Bailetti, 2012). Technopreneurship is a strategy for the maintenance and excellence of sustainable parameters of competitive advantages in organizations (Tajeddini, 2010).

ICT Self-Efficacy

ICT self-efficacy in the ability of an entrepreneur to use information systems to influence business operation. An entrepreneur can show a strong influence on users in adopting such information systems (Ajjan, Crittenden, & Goneos-Malka, 2019). ICT self-efficacy talks about one's judgment about his ability to use computers and the internet (Crittenden, Crittenden, & Ajjan, 2019; Alahakoon & Somaratne, 2018a, 2018b.). ICT Self Efficacy consists of two capability domains, namely computer and internet Self Efficacy (Papastergiou, Gerodimos, & Antoniou 2011). ICT Self-Efficacy is a key element of effective technopreneurs' behavior that leads to entrepreneurial learning (Dorf & Byers, 2008), it has a strong influence on business performance and growth and encourages individuals to seek knowledge in achieving their goals (Papastergiou, et al, 2011). ICT Self Efficacy is important for influencing learning outcomes in technopreneurship

He and Freeman (2010a) illustrate that ICT self-efficacy is a set of beliefs about having the capability to perform tasks using a computer; these beliefs can have either a direct or indirect effect through attitude on behavioral intention. ICT self-efficacy has been found to determine individuals' attitudes, particularly in the context of information systems (He & Freeman 2010a).

Extending this to our context, those who are capable of interacting with various software applications and handling common computer operational problems would be more likely to evaluate themselves positively and to show a satisfactory attitude toward initiating a new business.

Krueger, Reilly, and Carsrud. (2000) suggest that ICT self-efficacy can predict opportunity recognition and self-employment intention. Accordingly, it can be argued that ICT self-efficacy impacts entrepreneurial intention (Ajjan et al 2019). For instance, individuals who possess good ICT knowledge and skills are likely to show greater beliefs in their ability to develop a new enterprise. From another perspective, perceived feasibility (i.e., an individual competency to perform a specific task) which conforms closely to self-efficacy has been found to explain entrepreneurial intention (Xiao & Fan, 2014). This concept can be expanded to include individuals who are competent at using a computer and various software applications. General ICT self-efficacy, which is a special application of computer self-efficacy, also tends to influence one's career interests and choices (He & Freeman, 2010a).

Adaptability

Adaptability requires searching for new technologies, ideas, and methods that may improve or change a process routine to match the demands of the technological world. Adaptability involves processes that are based on knowledge acquired from a previous action. While adaptability is said to help in reproducing, it also helps in improving existing models in a bid to meet demands and clients' expectations (Zaheer, Yvonne, & John, 2019). Adaptability stresses the importance of studying technology and trend with regards to products and services thereby devising innovative strategies to meet current demand. Adaptability is the ability to learn and comprehend new technology with confidence and without fear (Stelios, Dimosthenis, Angeliki, & Katerina, 2020).

Adaptability is required to function in our world of changing technology. It is a highly prized skill in today's workplace. While there is the need for current technology skills there is also the need for people to have more knowledge of the latest trends. They need to be able to adapt to new technologies easily (Kuratko, Jeffrey, & Jeffrey 2015). As technology continues to grow exponentially, individuals must become more and more adaptable to keep up with the constant changes. Technological adaptability can be taught, can be learned, can be expanded, and can be researched. Because Technodaptability has only touched on this skill peripherally, multiple markets are filled with opportunities for growth in this area (Suryaningrum, Billy, & Corry, 2019).

Entrepreneurial skills will drive the economy back to prosperity. Technopreneurship is not a product, but a process of synthesis in engineering the future of a person, an organization, a nation, and the world. Strategic directions or decision-making processes are becoming more demanding and complex. This requires on-site professional development programs and training to produce strategic thinkers who will have skills and develop adaptive strategies to succeed in a rapidly changing global environment.

Innovation

Innovation is the utilization of new technology in an organization. In most cases, scholars discuss innovation in conjunction with entrepreneurship as both are believed to influence technological development in designing, production, and marketing of goods and services (Jonsson, & Rudberg 2017). Innovation is about new processes and new ways of doing things that may not be obvious to customers but adds significant value in delivering the services and products that customers require. Ndofirepi, (2020) holds that: ‘‘Innovation consists of the generation of a new idea and its implementation into a new product, process or service, leading to the dynamic growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise. Innovation is a long and cumulative process of a great number of the organizational decision-making process, ranging from the phase of generation of a new idea to its implementation phase, it is important to note that creativity involves generating novel ideas (Ahlin, Drnovšek, & Hisrich, 2014) but innovation involves commercializing the new ideas. Through the implementation process, new ideas are developed and commercialized into a new marketable product or a new process with attendant cost reduction and increased productivity’’.

Caggese (2012) holds that “entrepreneurial firms are an engine of innovation and technological progress, and they are likely to be responsible for a substantial portion of productivity and employment growth”. It is believed that technopreneurs have access to technology that produces output using capital and is subject to exogenous idiosyncratic shocks to its revenues, (Gundry, & Kickul, 2014; Dessyana & Riyanti, 2017). Innovation can be categorized into sub-areas that include technological innovation, product innovation, process innovation, and business innovation.

This is the essence of technopreneurship as entrepreneurial firms are an engine of innovation and technological progress, and they are likely to be responsible for a substantial portion of productivity and employment growth. Innovation is pivotal in technopreneurship. Lee and Narjoko (2015) look at innovation as a process or system of introducing products, businesses, or processes in organizations. Clausen and Korneliussen (2012), indicated that entrepreneurship assists the development and commercialization of technology and products through venture incubation; and this was after realizing that entrepreneurial orientation proved to have a positive effect on bringing technology and products quickly to the market (Petti & Zhang, 2011; Dolatabadi & Mohammad, 2013).

Growth

The suggestion that there is a strong and positive correlation between technopreneurship and the growth of enterprises has certainly been discussed in literature since the early works on entrepreneurship and economic development. Experts argue that an increase in the number of technopreneurs leads to an increase in enterprise growth which is also a direct result of their skills, and their tendency to innovate (Dejardin, 2000; Nunes, Zélia, & João, 2013). Their ability to generate enterprise growth in a particular economy is normally manifested in their innovative capability, by introducing new goods and services which are not familiar to consumers, new quality, a new method of production, opening of a new market, and capture of a new source of

supply of raw materials or other inputs (Wainaina, & Oloko, 2016). The obvious ability and willingness of entrepreneurs (who anchor their business thrust on technology) to practically perceive and create new business opportunities and decide to venture into such opportunities despite the challenges of market uncertainties and other impediments, affect and ultimately renew the business activities, not only within their business units and industries, but also within the economy they are situated (Alvarez, & Barney, 2007).

Growth is said to be the outcome of an enterprise's process to increase quality and expansion. It is defined as a change in size over a specific period (Dobbs & Hamilton, 2007). Growth is the result of the expansion of demand for products and services and it results in increased sales and consequently in expansion via investment in additional products based on market demand. According to Achtenhagen, Naldi, and Melin, (2010) growth can be measured by an increase in sales, increase in the work strength (number of employees), increase in profit, increase in assets, increase in the firm´s value, internal development, etc. also Davidsson, Achtenhagen, & Naldi, (2010) believes that growth may not be related to new markets concerning technology firms.

In addition, growth may occur alternatively as the integration of part of the value chain, a sort of vertical growth, or when a firm introduces itself within a market not related to the technology in which it works, which would be a non-related diversification (Wainaina, & Oloko, 2016; Njomo, & Margaret, 2016). Another type of growth may be related to the combination of market-product by entrance into the market. Growth is the geographical expansion, increase in the number of branches, inclusion of new markets and clients, increase in the number of products and services, fusions, and acquisitions (Brush, Ceru, & Blackburn, 2009).

According to these authors, growth is above all a consequence of certain dynamics built by the entrepreneurs to construct and reconstruct constantly, based on the assessment made on their firms and the market. Growth is a socially constructed factor; progress in the milieu or expansion is the product of a constant dynamism since growth intentions change as a result of constant evaluations and re-evaluations that entrepreneurs make as agents. It may result in the displacement of the firm to another place and in fixing itself in the same place. It is the “growth dilemma” (Davidsson et al., 2010).

Market Penetration

Market penetration focuses on expanding a company’s sales on existing products or services in an existing market, Nathan (2013). Penetration of the market involves attracting new customers for the product and increasing the usage or purchasing rate of existing customers it is often achieved by increasing activities through more intensive distribution aggressive promotion and competitive pricing. This makes the firm’s products the most preferred against those of the competitors. This has the advantage of preventing a company from relying too much on its existing products (Dugguh, Isaac, & Oke, 2018; Susmitha, 2014). It can be a means of growth and expansion by the firm and can also act as insurance against potential disasters in case of large environmental changes. It involves the introduction of new products into market sectors that are new to the company or it may be that the product is new to the company but it has been already available in the market (Okundaye, Fan, & Dwyer, 2019).

Market penetration focuses on existing products for existing markets. This involves the business aiming to increase sales within its present market. To be successful at market penetration a business must be aware of what has made the product a success in the first place (Okundaye, et al, 2019). This concentrates more on sales of existing markets and products. Ajagbe & Ismail (2014) argues that value creation is realized through a concerted effort that leads to accelerated growth of innovative product and services either with technology or greater market penetration ability. Technopreneurs contribute to the growth of the economy and market penetration which can be local or international, attract innovation and high technology businesses, and create a brand image for the Organization and region where it is located.

According to Okorie, Kwa, Olusunle, Akinyanmi, and Momoh (2014), the method of market penetration is a procedure of mainstreaming innovation in solving multiple complications and implementing the solutions to satiate the global market. Also, it emphasizes mixing technology with entrepreneurship. Most technopreneurs venture into businesses that are technology grounded because they make use of advanced technology to come up with ground-breaking products through the act of commercialization. Potentially, these technopreneurs are armed with technical skills that are needed to flourish the business. Continually, they go through an organic process of endless improvement and try to redefine the vibrant digital economy. While technopreneurship is involved in providing an innovative hi-tech product in an advanced way to supply its product, it is meant to ensure organizational growth and survival (Aldrich & Jennings, 2003; Tung, 2011).

Empirical:

Yusuf, Lawal, and Festus, (2019) assessed the link between technopreneurship education and business intention. The population of the study consists of undergraduate students in tertiary institutions in Kwara State. Two sampling techniques, namely, stratified and multi-stage sampling techniques were used to select 367 students. Instruments titled “Technopreneurship Education and Business Intention Questionnaire (TEBIQ)” were adapted to collect relevant data for the study. Both Statistical Packages for Social Sciences (SPSS) and Partial Least Square (PLS) software were used to analyze the data collected. Specifically, SPSS was used for data screening while PLS was adopted to gauge the association between independent and dependent variables of the study. Results show that entrepreneurship courses positively influenced students ' business intention while the use of online material positively influenced students’ intention to start the business. Also, the findings showed that the use of social media by students positively influenced their decision on business intention.

Moemenam, Moemenam, Okwara, Ohagiro, and Alozie, (2017) investigated the relationship between Technopreneurship Education and Technological Advancement in Nigeria. The method of data analysis was the use of the Likert scale rating model with a 2.5 benchmark. A major finding of this work reveals that there is a strong agreement among respondents that increase the supply of technopreneurship increases Technological Advancement in Nigeria. Other findings reveal that corruption, lack of government support, inadequate infrastructure, etc are some of the constraint factors that are responsible for the poor supply of technopreneurship in Nigeria. Among the recommendation are that government should adopt a variable policy that will encourage the supply of technopreneurship in Nigeria. They should endeavor to recover all the

stolen money from corrupt leaders and use it to improve the supply of technopreneurship so that the economy can improve and living standards increased in Nigeria.

Dutse, Ningi, & Abubakar, (2013) explored the role microfinance banks can play in promoting technoprenuership derive and growth among micro, small and medium scale enterprises in Nigeria by employing Pearson Correlation to establish the relationship between the variables and Multivariate Analysis of Variance to show causal effects. The coefficients results show a strong positive association between the variables as well as a significant causal effect between the predictor variable and the two criterion variables. Hence it is recommended that creating favorable financial conditions for entrepreneurs will hasten the development of technopreneural drive and subsequent enterprises growth in Nigeria

Methodology

A cross-sectional survey research design was adopted in this study. This is because it is a fact-finding technique that focuses on people. The target population includes those that are Technopreneurs in the area of Technology in Nigeria. 18 tech companies were selected from six geo-political zones – three from each geo-political zone. A total population of 376 employees, chief technical officers, and chief operating officers, were selected from these companies. A sample size of 132 was derived using the Taro Yamane formula. The questionnaire was adapted from a mix of extant literature. The method of data analysis was the use of the Likert scale rating Model in which questions were structured on 5 points rating scale of Strongly Agree (SA) 5 points, agree(A) 4 points, Undecided (U) 3 points, disagree (D) 2points and strongly Disagree (SD) 1point; with a mean of 2.5 Bench Mark. As a result, any mean that is greater than 2.5 is Agree while any mean that is below 2.5 is Disagree SPSS Version 27 was used to assess the relationship between the dimensions of technopreneurshiop and the growth of new tech companies.

4.0 Result

Out of 132 questionnaires distributed, 124 were retrieved which represents 94% and 110 were properly filled and represents 89%. Thus these 110 (89%) were valid and suitable for the research. Others that were not properly filled were discarded as null and void. Distribution on respondents' demographics information revealed that 77.8% of the study respondents were males while 22.3% were females, this implies that the tech industry is largely dominated by males. Also, distribution on respondents age revealed that those within the age bracket of 26 – 35 years dominate the tech industry representing 31.3% followed by those who are between 36 - 45 years representing 28.2% than those who are less than or equal to 25 years representing 22.4% and lastly those who are greater than or equal to 46 years representing 18.1%. This shows that the tech system in Nigeria is largely dominated by youths. Lastly, the distribution on educational qualification shows that a large number of respondents have a BSc. or HND degree as their highest educational qualification representing 49.6% followed by those who have OND or its equivalent representing 20.7% than those who have O'level representing 16.3% and lastly those who have MSc or its equivalent representing 13.3%. this implies that irrespective of educational qualification the youths (as represented by their age) still strive to venture into the tech eco-system.

Respondents Demographic Information

Variable	Item	Frequency	Percent (%)
Gender	Male	189	77.8
	Female	64	22.3
Age	<= 25 years	33	22.4
	26 – 35 Years	88	31.3
	36 – 45 Years	44	28.2
	>= 46		18.1
Educational Qualification	O'Level	39	20.8
	OND	134	16.3
	BSC/HND	80	49.6
	MSc		13.3

Test of Hypotheses

Ho_1: There is no significant relationship between ICT Self-Efficacy and Market Penetration.

Correlations

			ICT Self-Efficacy	Market Penetration
Spearman's rho	ICT Self-Efficacy	Correlation Coefficient	1.000	.581**
		Sig. (2-tailed)	.	.001
		N	110	110
	Market Penetration	Correlation Coefficient	.581**	1.000
		Sig. (2-tailed)	.001	.
		N	110	110

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

SPSS output, Version 27

The result reveals a significant relationship between ICT self-efficacy and market penetration. A moderate positive correlation coefficient value was reported between the variables and it was statistically significant (rho = .581**, p = .001 < 0.05) this suggests that there is a significant relationship between the variables. The null hypothesis (**Ho_1**) is rejected and we state that there is a significant relationship between ICT self-efficacy and market penetration.

Ho_2: There is no significant relationship between Adaptability and Market Penetration

Correlations

			Adaptability	Market Penetration
Spearman's rho	Adaptability	Correlation Coefficient	1.000	. 467**
		Sig. (2-tailed)	.	.000
		N	110	110
	Market Penetration	Correlation Coefficient	.467**	1.000
		Sig. (2-tailed)	.000	.
		N	110	110

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

SPSS output, Version 27

The result reveals a moderately positive but significant relationship between adaptability and market penetration. A strong positive correlation coefficient value was reported between adaptability and market penetration which was statistically significant (rho = .467**, p = .000 < 0.05) this suggests that there is a significant relationship between the variables. Thus, the null

hypothesis (**Ho_2**) is rejected and we state that there is a significant relationship between safety adaptability and market penetration.

Ho_3: There is no significant relationship between Innovation and Market Penetration

Correlations

			Innovation	Market Penetration
Spearman's rho	Innovation	Correlation Coefficient	1.000	. 574**
		Sig. (2-tailed)	.	.000
		N	110	110
	Market Penetration	Correlation Coefficient	.574**	1.000
		Sig. (2-tailed)	.000	.
		N	110	110

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

SPSS output, Version 27

The result reveals the relationship between innovation and market penetration and a positive significant relationship was reported between innovation and market penetration which was statistically significant (rho = .574**, p = .000 < 0.05 alpha value) this suggests that there is a significant relationship between the variables. Thus, the null hypothesis (**Ho_3**) is rejected and we state that there is a significant relationship between innovation and market penetration.

Discussion of findings

The second research objective is to examine the connection between technopreneurship and the growth of new tech companies. To achieve the research objective, three hypotheses were formulated. The first hypothesis postulates that there was no relationship between ICT self-efficacy and market penetration. The results from the first hypothesis indicate that ICT self-efficacy in technopreneurship has an impact on market penetration and growth of new tech companies. The current finding is incongruent with resource based-human capital theory of entrepreneurship which proposes that entrepreneurship can be understood from two underlying perspectives, namely education, and experience (Clausen, & Korneliussen 2012; Shane & Eckhardt, 2003) because it is anticipated that the knowledge added from both experiences and formal education of ICT connotes a resource that is heterogeneously distributed across qualities and indeed central to understanding transformations and application of technology in business.

The second hypothesis postulates that there was no significant relationship between adaptability and market penetration. Results from the second hypothesis show that technopreneur adaptability influenced their level of market penetration which is a determinant of growth. This is in agreement with the study of Mursityo, Astuti, and Suharsono (2017) who concluded that there is a connection between creativity, adaptability, and business growth. The finding is also in consonance with the studies of Kamarudin and Sajilan (2013) and Selvarany and Venusamy (2015) who concluded that the use of technology enhances involvement in technopreneurship and guarantees business survival.

The third hypothesis postulates that there was no relationship between innovation and market penetration. The results indicate the relationship between technopreneur innovation and market penetration which is a measure of business growth. Precisely, it implies that technopreneurs who are innovative and are up to date with recent technological trends increase their chances of

business growth. The finding is in tandem with the study conducted by Suzuki et al. (2002) who established that two countries have adopted advanced technology in growing their businesses. In the same vein, Rothschild and Darr (2003) established that the use of technology has produced synergy towards the achievement of entrepreneurial activity.

Conclusion and Recommendations

The study identified key dimensions of technopreneurship (ICT self-efficacy, adaptability, and innovation) and reasserts their impact on the growth of new tech companies. The study, therefore, concludes that in a bid for new tech companies to generate high-value jobs, spawn export activity, generate new jobs, improve productivity, and experience growth it's important for technopreneurs to be ICT worthy i.e have a working knowledge of ICT, be prepared for technological adaptability and be innovative to match up with the constant technological changes. Also, the study concluded that technopreneurship activities such as cybercafé business, building software's that aimed at tackling global issues, etc are the bedrock of tech companies. It was revealed that males are more involved in technopreneurship than their female counterparts and this resulted in a higher level of economic empowerment among males than their female counterparts. Moderate educational attainment (O'level) is the only basic requirement for successful technopreneurship engagement and empowerment. The recommendations are based on the findings of this study. Technopreneurs are into the production of technologically driven products. Therefore, technopreneurs should focus on developing indigenous technology and commercialize technological innovation. It is important to acquire ICT maintenance skills and collaborate with successful global technopreneurs. ICT-Skills Incubation Centers should be established and aimed towards technopreneurship ventures.

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