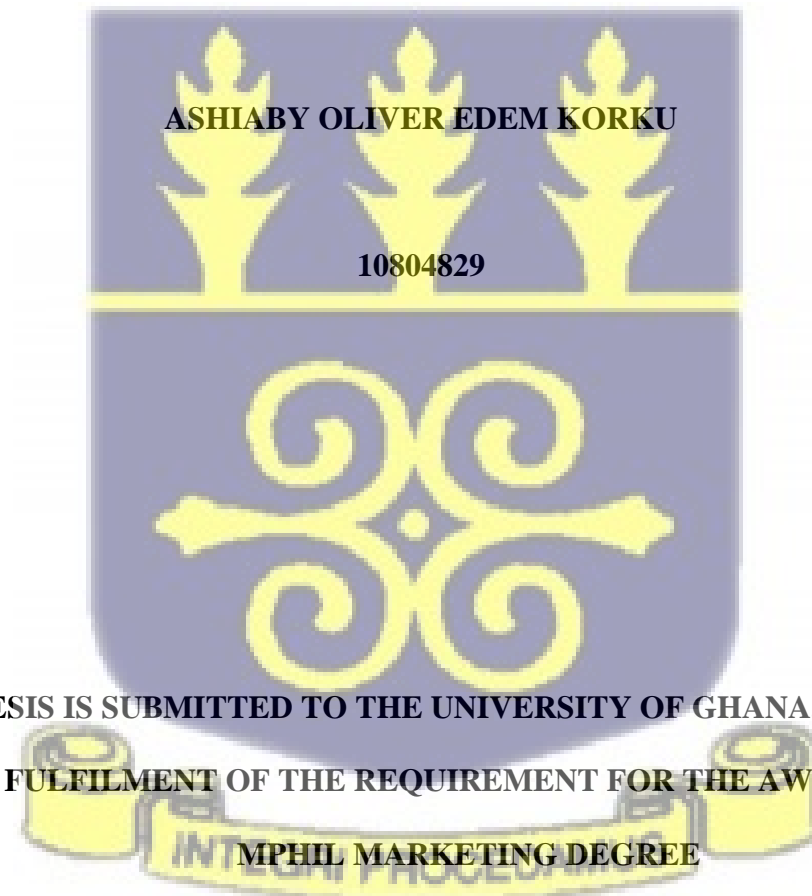


**UNIVERSITY OF GHANA**

**EXPLORING THE IMPACT OF TECH HUBS ON TECH-BASED  
ENTREPRENEURSHIP IN GHANA**

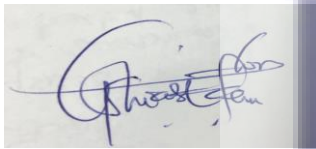


**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN  
PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF AN  
MPHIL MARKETING DEGREE**

**JANUARY 2022**

**DECLARATION**

I do hereby declare that this thesis is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged. I bear sole responsibility for any shortcomings.



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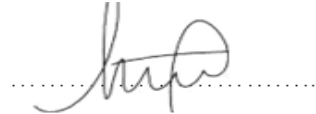
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**CERTIFICATION**

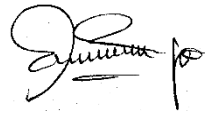
We hereby certify that this thesis was supervised in accordance with laid down procedures by University of Ghana, Legon.



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DATE



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July 25, 2022.

DATE



**DEDICATION**

I dedicate this my beloved wife and children who made a great investment in my life, by supporting this worthy course.



### ACKNOWLEDGEMENT

In preparing this report many people have been of immense assistance. I wish to acknowledge my indebtedness to the Almighty God who strengthened me. I wish to express my profound gratitude to my supervisor Dr. Raphael Odoom. Thank you for your timeless dedication, guidance, motivation, corrections, and insightful suggestions throughout the supervision of this thesis. Further, I am thankful to my co-supervisor Professor Bedman Narteh for your guidance and support throughout the study. I would like to thank my family, who have continually laboured for me and have been a constant pillar in my life. My profound gratitude also goes to Madam Loretta Tetteh, Adjoa Halm-Quagraine for your immense support. God bless you for your support throughout this journey. Finally, I would like to express my profound gratitude to all my course mates who in diverse ways contributed to the outcome of this study.



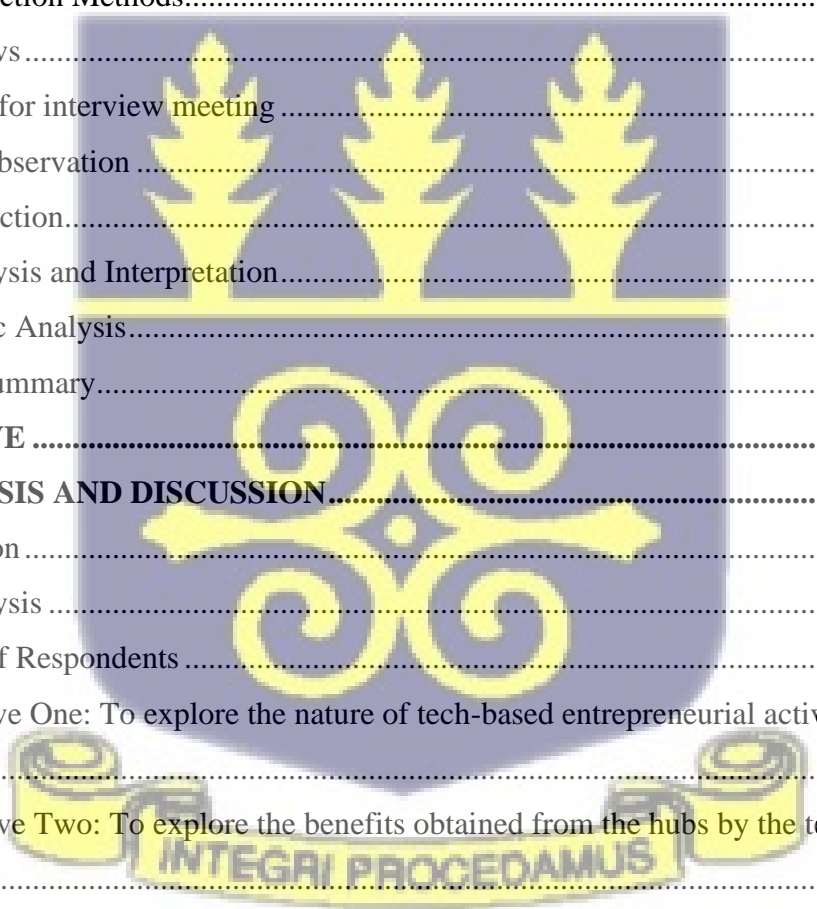
## ABSTRACT

The concept of technopreneurship or technology driven entrepreneurship has over the years come into the lime light with technology hubs playing a pivotal role in churning out innovations daily through their various entrepreneurial activities. Though the area is quite new in the Ghanaian context the contributions made by tech hubs to the success of tech-based start-ups cannot be overlooked. There is still more room to explore its uncharted space to discover new dimensions and how they impact on start-ups in Ghana. This study in view of this sought to explore the impact these tech hubs have on tech-based start-ups by considering three research objectives and questions. The study adopted a qualitative research approach, utilizing a case study technique, interviews and a purposive and convenient sampling techniques to sample ten respondents, one being the tech hub used as the case study; Innohub and nine start-ups. The first objective, explored the nature of tech-based entrepreneurial activities which revealed that tech hubs provide skills development and training programmes, funding and prepares start-ups to be investor ready and guides them through a period of idea generation and incubation. The second objective revealed three main benefits which include infrastructural support, access to investors and the creation of long-lasting network of individuals who think alike. The third objective discovered some few challenges like data security issues and unstable internet supply. These concerns or challenges, like the internet supply not being stable and data security major issues confronting all who use the internet. The study recommends that policy makers and institutions of government should ensure that an enabling environment is created to promote technology-based entrepreneurs in Ghana. More collaboration with the private sector should be done in promoting technopreneurship activities. Again, funds should be set up to enable start-ups access loans easily.

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**LIST OF ABBREVIATIONS**

CSIR	-	Centre for Scientific and Industrial Research
DOI	-	Diffusion of Innovation
DIY	-	Do it Yourself
FICO	-	Fair Isaac Corporation
GEI	-	Global Entrepreneurship Index
GEM	-	Global Entrepreneurship Monitor
ICT	-	Information Communication Technology
ICT4D	-	ICTs for Innovation/Development
IT	-	Information Technology
OECD	-	Organisation of Economic Co-activity and Development
QR code	-	Quick Response Code
STI	-	Science Technology & Innovation
TAM	-	Technology Acceptance Model
Tech Hubs	-	Technology Hubs
UNICEF	-	United Nations International Children's Emergency Fund



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

In years past, getting access to information regarding the establishment of entrepreneurial ventures was such a tough task for many young entrepreneurs (Shepherd, Wennberg, Suddably & Wiklund, 2019). Receiving assistance from experienced entrepreneurs meant the physical movement from one location to the other due to the absence of easy and simple channels to transmit information from one point to another (wang et al., 2019). Information sharing seemed to be a major challenge to many successful entrepreneurs as they felt it might reveal their trade secrets or certain sensitive information about their businesses (Nissenbaum, 2020).

The emergence of technology and the internet has changed the face of doing business in modern times with regards to information sharing (Kraus et al., 2018), business applications powered by technology and global access to markets (Morkunas et at., 2019). Young entrepreneurs who are technologically oriented can now have access to information and receive guidance in their choice of endeavours from experienced professionals and also from their peers who are like minded (Brown et al., 2019). This creates a hub for these individuals to harness the opportunities available to them. Technology hubs (Tech Hubs) emerged to provide this missing link from the past to make entrepreneurship information sharing easier and also introduce a new perspective by merging the application of technology and entrepreneurship (Guinan et al., 2019).

Tech Hubs are physical spaces which could either be a city, suburb or just a collection of office suits developed to offer help to technological startup companies to ensure their success. Cobral

and Widen (2016) opined that; a tech hub is a community which could either be casual or formal, which promotes novelty for primarily technologically oriented startup companies. These tech pivots create enabling environments which precisely target technology based budding entrepreneurs by helping them to find their footings through the massive encouragement of experimentation without chastising failure. This eventually leads to the creation of a network of individuals and organizations that think alike (Surana et al., 2020) and also get easy access to investors who fund their activities.

The world today has become a hub of technological innovation churning out new products daily to make life comfortable for all mankind (Fichman, Dos Santos & Zheng, 2014). Businesses today cannot be successful in their operations if they refuse to embrace the massive contribution of technology in their businesses. From the simplest form of business operations to the most complex organizations, it is evident that technology plays a pivotal role in running the activities of the firm in diverse ways (Fitzgerald et al., 2014)

According to the 2016 World Bank Development Report, a minimum of 117 technology hubs are located in Africa (World Bank, 2016). Some examples of hubs in Ghana are; Impact Hub, Kumasi Hive, Ho Node Hub, Hapa space, Ispace Foundation, Work Shed, Mobile Web Ghana, HopIn Academy, KK Hub just to mention a few. These organizations are all seeking to promote tech-based entrepreneurship in the country. Another example on the African continent is the Klab in Kigali Rwanda not forgetting the Silicon Valley in the United States of America which has produced technology giants like Facebook and Google. These hubs are Information Communication Technology (ICT) based institutions or locations which exist solely to provide

the necessary training and support to start-ups and other budding entrepreneurs in the country in their various fields of operation (Kummitha & Crutzen, 2019). Currently, business establishments are putting up structured programmes that will enable them harness the entrepreneurial capabilities these hubs provide (Heaton, Lewin, & Teece, 2020). This new trend has resulted in the establishment of certain facilities earmarked to better the lives of individuals across many facets of life for example the health care delivery- drone technology which is used in delivering essential healthcare supplies to hard-to-reach areas efficiently and promptly and the use of the Quick Response Code (QR code) within the financial sector to facilitate transactions. Tech- hubs in Africa, especially Ghana cannot be overlooked in studying this new wave in developing start-ups with ICT focus today.

## 1.2 Research Problem

The new phenomenon of providing the requisite skills and support to start-ups in technopreneurship or technology-based enterprises has greatly impacted in the rise of entrepreneurial activities driven by ICT in many economies today (Yuldinawati, Tricahyono, Anggadwita, & Alamanda, 2018). This new trend has resulted in the establishment of certain facilities earmarked to better the lives of individuals across many facets of life for example the health care delivery- drone technology which is used in delivering essential healthcare supplies to hard-to-reach areas efficiently and promptly and the use of the quick response code (QR code) within the financial sector to facilitate transactions. Uctu and Essop (2020) opined that, although all these services have been enabled by technology-based enterprises or hubs, the impact of these technology hubs are not well known by many and how they help in developing entrepreneurial drive related to tech-based ventures.

Some explorations have analyzed a few Tech hub topics, like the effect of globalization, harmony and soundness on modernization (Amavilah et al., 2017), information economy execution then direction of African nations (Vadra, 2017), besides the strategy conditions and techniques for building information-based economies (Obamba, 2013). Academic discourse has additionally seen exploration in this field according to the viewpoint of the contributions made by colleges as the significant wellspring of information and its capacity to stay valuable to society and industry. This latest entity represents an incredible test to colleges to realign themselves by changing from being information manufacturing plants to limit crossing centre points associating the scholarly world to nearby organizations' local gatherings and the business in inspiring innovation and financial improvement in a substantially more unique and hearty way (Wright & Clarysse,2012).

While this study acknowledges the relevance of earlier studies in enlightening our intellect on the changing aspects and subjects relating to the impact of tech hubs on the entrepreneurial drive of technopreneurship in the African region, this current study also noted some gaps.

As indicated by Toivonen (2016) and Toivonen and Friederici (2015), there is by all accounts some information on hub centres as mediators in surviving writing, inside and out comprehension of this study and what their actual roles in entrepreneurship really involves is deficient. In a review directed by Pe'er, and Keil (2013), it was recognized that there is the need to additionally investigate how the climate and the asset base of the firm communicate to shape the conduct of new companies.

Again, earlier scholarly examinations have applied a lot of exertion into concentrating on the impacts of ICT on totaled measures like monetary development, work, and usefulness. However, there is little writing in regards to their consequences for business venture; albeit, the writing regarding the matter is later, there is the need to support future examinations for a superior understanding of the ICT occurrence on business venture. (Alderete, 2017).

Also, existing work on hubs mostly concentrated their work in developed country contexts. Much less or fewer studies on hubs have been done in the African contexts especially sub-Saharan part (Armanios et al., 2017 and Dutt et al., 2016). This study seeks to find solutions to the above-mentioned gaps by exploring the impact of tech hubs on tech-based entrepreneurship citing Ghana as a contextual case for the African perspective, with specific focus on the nature of tech-based entrepreneurial activities offered by these hubs, the benefits obtained by the tech-based firms and also the challenges faced under the hubs by these startups.

### 1.3 Research Objectives

The study explores the impact of Tech-hubs on tech-based entrepreneurship in Ghana. Ensuing are the specific objectives of the study;

1. To explore the nature of tech-based entrepreneurial activities offered by the hubs
2. To explore the benefits obtained from the hubs by the tech-based organizations
3. To explore the challenges experienced as startups under the hubs.

#### 1.4 Research Questions

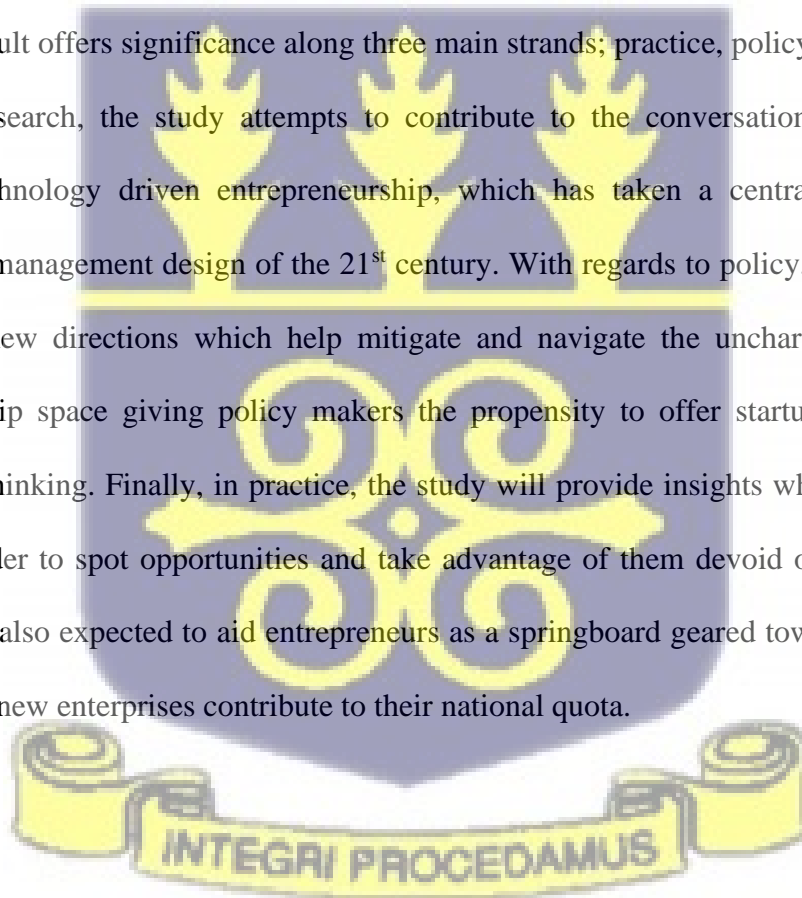
The ensuing explorative questions would be posed to be able to better explore the objectives set above;

1. What is the nature tech-based entrepreneurial activities offered by the hubs?
2. What are the benefits obtained from the hubs by the tech-based organizations?
3. What are the challenges experienced as startups under the hubs?

#### 1.5 Significance of the Study

The research result offers significance along three main strands; practice, policy and research.

Considering Research, the study attempts to contribute to the conversation surrounding the concepts of technology driven entrepreneurship, which has taken a central position in the entrepreneurial management design of the 21<sup>st</sup> century. With regards to policy, the current study aims to bring new directions which help mitigate and navigate the uncharted terrain of the technopreneurship space giving policy makers the propensity to offer startups directions and drive strategic thinking. Finally, in practice, the study will provide insights which entrepreneurs can adopt in order to spot opportunities and take advantage of them devoid of their contextual challenges. It is also expected to aid entrepreneurs as a springboard geared towards their growth and aiding such new enterprises contribute to their national quota.



## 1.6 Study Organization

The study is prearranged in six core sections. The first section comprises the Introduction which looks at the Background of the Study, Problem Statement, and Research objective and or questions together with the Significance, Limitations and Scope of the study. Chapter Two is the literature review while Chapter Three covers the context of the study. Chapter four shall cover the Methodology and Chapter Five shall focus on Results and Discussions while finally, Chapter six shall look at the Summarized Findings, Conclusions deduced and the Recommendations made.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The overall aim of a literature review is to audit past investigations of interest, this is to recognize key subjects and general spaces of concern. The literature will look at published writing with respect to tech hubs and business. Additionally, key ideas will be characterized to establish the atmosphere for the review subject's determination and conversations.

#### 2.2 Innovation as diffusion of technology

Dispersion of Innovation (DoI) Theory is principally concerned with clarifying how a novel thought or development engenders within a social framework. In this regard, the DoI (Rogers, 1995) and the TAM (Davis, 1989) have been broadly utilized in data frameworks to investigate and thusly establish the prevailing hypotheses in examinations taking a peek on the job of ICTs for Innovation/Development (ICT4D) over the past two decades (Annika and Hatakka, 2013; Zheng, 2015). DoI expresses understanding on how ground-breaking thoughts spread inside populaces. As indicated by Rogers (1995), there exist four components that impact the spread of a novel thought: a social framework, innovation, time, and correspondence channels.

Moreover, he offers five distinct points (information, influence, choice, execution and affirmation) that the innovation needs to go through for it to be spread by means of various correspondence channels. Thusly, Rogers' model portrays the invention choice interaction. The dispersion model is applicable to investigations of innovation; nonetheless, the fixed and oversimplified parts of the model proposition some procedural constraints, observably as the

various progressions of data adjust the sequence of development (Agarwal & Prasad, 1998). From this model, the dispersion is by all accounts practically programmed and mechanical and does not consider the social elements of how and why a development is really taken on.

### **2.2.1 Innovations Attributes and Adoption Rate**

Rogers (2003) gave a clarification for the dissemination development measure as a weakness decrease ration, and he proceeded to propose the accompanying credits of developments that assist with diminishing vulnerability about the innovation. The credits of innovations proposed incorporate these five qualities iterated: relative benefit, similarity, intricacy, trialability, and discernibleness. The scholar thought that people's view of these qualities anticipates the pace at which innovations are received.

Once more, Rogers insinuated that in spite of the fact that there is various dispersion research on the qualities of the adopter gatherings, there is an absence of examination on the impacts of the apparent attributes of innovations on the pace of reception. Rogers (2003) “characterized the pace of reception as the relative speed with which a development is embraced by individuals from a social framework” (p. 221). For instance, the number of people who embraced the innovation for a while can be estimated as the pace of reception of the development.

The apparent qualities of development are huge indicators of the pace of reception. Rogers detailed that between 49-87% of the fluctuation in the pace of reception of developments is clarified by these five ascribes. Notwithstanding these traits, the innovation choice sort (discretionary, group, or authority), correspondence channels (broad communications or relational channels), social framework (standards or organization interconnectedness), and

change specialists might expand the consistency of the pace of reception of developments. For example; individual and discretionary developments ordinarily are taken on quicker than the innovations including a hierarchical or aggregate innovation choice. In any case, Rogers, relative benefit is the most grounded indicator of the pace reception of an innovation.

**Relative Advantage:** Rogers (2003) and Vargo et al. (2020) characterized relative benefit as how much a development is seen as being superior to the thought it over rides. The expense and societal position inspiration parts of developments are components of relative benefit. For example; while trailblazers, early adopters and early larger part are more status propelled for taking on innovations, the late greater part and slow pokes see status as less huge. In addition, Rogers ordered developments into sorts; preventive and steady (non-preventive) innovations give advantageous results in a brief period. At the point when employees face the new requests put on them, they will take on innovation (Casmir, 2001; Mallya, 2019). Assuming educators see that innovation has esteem in their guidance, they will utilize it (Finley, 2003; Spotts, 1999; Karsh, 2018). To incorporate innovation effectively into instructor schooling courses, educator training staff should see the need giving accommodating encounters to themselves and their understudies (Schmidt, 1995; Poole et al., 2021). To expand the pace of embracing developments and to make relative benefit more viable, immediate or aberrant monetary instalment motivators might be utilized to help the people of a social framework in taking on an innovation. Motivations are important for help and inspiration factors. Another inspiration factor in the dissemination cycle is the similarity property.

**Similarity:** In some dispersion research, relative benefit and similarity were seen as comparative, in spite of the fact that they are theoretically unique. Similarity is how much a development is seen predictable with the current qualities, past encounters and needs of expected adopters

(Roger, 2003; Tournier, 2019). An absence of similarity in Information Technology (IT) with individual necessities may contrarily influence the singular's IT use (McKenzie, 2001; Sherry, 1997; Moon, 2021). In her writing audit, Hoerup (2001) depicts that every development impact instructor's perspective, convictions, qualities and perspectives about educating. Assuming a development is viable with a singular's necessities, vulnerability will diminish and the pace of reception of the innovation will increment. Subsequently, in any event, naming the development is a significant piece of similarity. What the development is called ought to be significant to the possible adopter. What the innovation implies additionally ought to be clear. The is essential for the intricacy quality.

**Intricacy:** Rogers (2003) characterized intricacy as how much a development is seen as somewhat hard to comprehend and utilize (p. 15). As Rogers expressed, inverse to different properties, intricacy is contrarily related with the pace of reception. In this manner, over the top intricacy of an innovation is a significant deterrent in its reception. A mechanical innovation may go up against employees with the test of changing their training procedure to coordinate the mechanical development into their guidance (Parisot, 1995; Opara & Nna-Emmanuel, 2022), so it may have various degrees of intricacy. Assuming equipment and programming are easy to use, they may be embraced effectively for the conveyance obviously materials (Martin, 2003; Song et al., 2020).

**Trialability:** According to Rogers (2003), trialability is how much an innovation might be explored different avenues regarding on a restricted premise. Additionally, trialability is decidedly associated with the pace of reception. The more an innovation is attempted, the quicker its reception is. As examined in the execution phase of the development choice interaction, re-evaluation might happen during the preliminary of the innovation. Then, at that

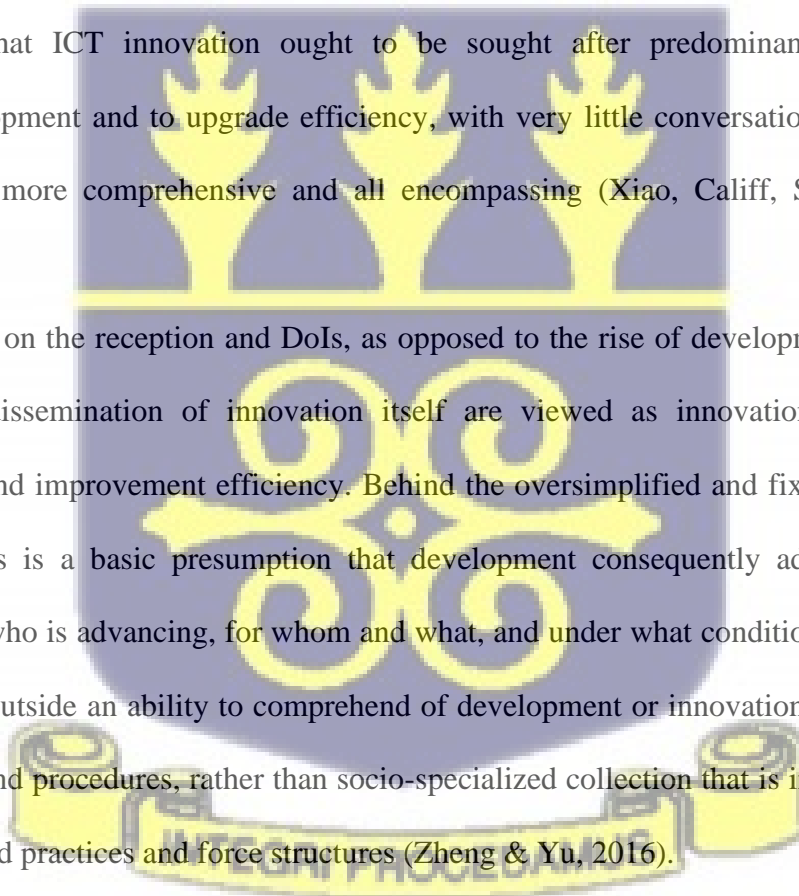
instant, the innovation might be reformed or altered by the expected adopter. Extended re-evaluation might quicker reception of the development. For the reception of an innovation, another significant factor is the vicarious preliminary, which is particularly useful for later adopters. Notwithstanding, Rogers expressed those previous adopters consider the property of innovations as more significant than later adopters 11

**Recognizability:** The last attribute of innovations is discernibleness. Rogers (2003) considered recognizability as by what means the after-effects of the innovation are noticeable to other individuals (p. 16). Job exhibiting (or peer acuity) is the vital persuasive influence in the reaction and dissemination of innovation (Parisot, 1997). Like relative benefit, similarity, and trialability, perceptibility additionally is decidedly associated with the stride of reception of an innovation.

TAM activities seek to clarify and foresee how clients come to acknowledge and utilize an innovation. As indicated by TAM, the impacts of outer factors on expectation to utilize relies upon the apparent value and saw usability (Venkatesh & Davis, 2000). Revisions applying this model look to recognize these viewpoints to clarify or anticipate whether clients will to be sure utilize a specific innovation. A few researchers have called attention to the fact that both DoI and TAM puts forward a few inadequacies given the way they look to foresee or clarify marvels which is conceptualized in a restricted way. This type of examination will in general underestimate various parts of setting and construction that shape the development, some of the time considering individuals as inactive gatherings of people that exist autonomous of the article (Rye, 2009; Akrich, Callon, & Latour, 2002).

There is insufficient regard for issues of force, legislative issues and culture, which influence clients' collaboration with development, or the inserted values in the plan of innovations (Zheng, 2015). Aside from its methodological and hypothetical constraints, it has been called attention to that in spite of the endeavours to work on the model by various distributions which gives the feeling that a gathering of information is happening (Benbasat & Barki, 2007), TAM has arrived at immersion level (Chuttur, 2009). Moreover, a solid impact of TAM on data frameworks research has delivered ideas like apparent convenience and saw usability to be treated as "secret elements" with no scrutinizing of their handiness in understanding the intricacy of mechanical reception in different social settings. Data frameworks research by and large offers the understanding that ICT innovation ought to be sought after predominantly to encourage monetary development and to upgrade efficiency, with very little conversation on what sort of development is more comprehensive and all encompassing (Xiao, Califf, Sarker, & Sarker, 2013).

The emphasis is on the reception and DoIs, as opposed to the rise of developments. Indeed, the reception and dissemination of innovation itself are viewed as innovation, as likeness of modernization and improvement efficiency. Behind the oversimplified and fixed perspective on these hypotheses is a basic presumption that development consequently addresses progress, without asking who is advancing, for whom and what, and under what conditions. Besides, there is a need to go outside an ability to comprehend of development or innovations as only a bunch of apparatuses and procedures, rather than socio-specialized collection that is implanted in belief systems, accepted practices and force structures (Zheng & Yu, 2016).



### 2.3 Business models: West African Tech Hubs

A plan of action is characterized as the reasoning behind how associations make, convey and catch esteem. This definition applies to a tech hub point as an association. Plans of action are not just about creating income for hub centers – they likewise are fundamental for their manageability. The interviews and data gathered from the 24 hub points uncover how they are organized to:

- Create esteem by focusing on explicit clients (for example business people, new companies, public/private associations);
- Organize themselves as far as HR and exercises to convey worth to their objective clients;
- Capture an incentive for themselves so they can become maintainable.

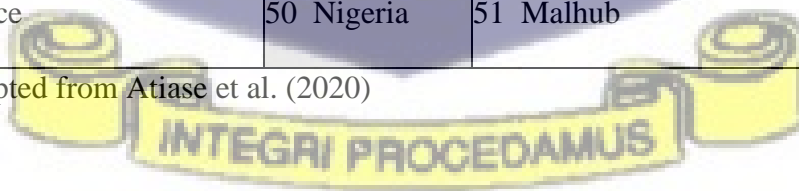
The quantity of dynamic tech hub points across Africa is developing consistently, ascending from 314 of every 2016 to 442 out of 2018, with additional because of dispatch. Tech hub points and innovation spaces are at the core of Africa's mechanical and start-up unrest, yet they face genuine troubles adapting and becoming manageable.



**Table 2.1 Tech hubs that were interviewed**

1 Organization	2 Country	3 Organization	4 Country
5 Founders hub	6 Nigeria	7 Innohub	8 Ghana
9 TVC Labs	10 Nigeria	11 Startup Incubator Gambia	12 Gambia
13 360 Creative Innovation hub	14 Nigeria	15 Innovalab	16 Bissau Guinea
17 kLab	18 Rwanda	19 JA Gabon	20 Gabon
21 CIPMEN	22 Niger	23 ActivSpaces	24 Cameroon
25 La Fabrique	26 Burkina Faso	27 Ingenious City	28 Democratic Rep. Congo
29 Concree	30 Senegal	31 MEST	32 Ghana
33 EtriLabs	34 Togo	35 Akure Tech Hub, FUTA	36 Nigeria
37 Harmony Innovation Hub	38 Nigeria	39 Impact Dakar	40 Senegal
41 Exponential Hub	42 Nigeria	43 Jokkolabs Dakar	44 Senegal
45 EnovateLab	46 Nigeria	47 CapitalSquare Workspace Solutions Ltd.	48 Nigeria
49 CodeSpace	50 Nigeria	51 Malhub	52 Nigeria

Source: Adopted from Atiase et al. (2020)



## 2.4 Hubs and innovative environments

Business people are key drivers of financial and social innovation. Quickly developing pioneering undertakings are frequently seen as significant wellsprings of innovation, efficiency development and business (little and medium-sized endeavours represent a high level of all positions in arising economies). Numerous states are subsequently attempting to effectively advance business through different types of help.' Entrepreneurship is an impetus for monetary development, innovation, work creation and beneficial financial results (Hanouz, Geiger, & Doherty, 2014). Innovation empowered new businesses are an especially powerful channel of these impacts.

All things considered; business venture has been inspected according to the viewpoint of a singular business person. All the more as of late, the climate (or environment) in which a business visionary works has been stressed (Park et al., 2017). Therefore, 'innovative environment' has turned into an ordinary term in administration science and business literature.<sup>4</sup> This term characterizes the climate where new companies work and balances the concentration among people and frameworks. An innovative environment is 'an arrangement of interrelated columns that sway the speed and capacity with which business people can make and scale new pursuits in a maintainable manner' (Chatterjee, Sarkar, Hore, Dey, Ashour & Balas, 2017).

Every environment is unique, yet most contain a few commonplace classifications of entertainers. For instance, the Aspen Network of Development Entrepreneurs' (ANDE) environment maps in Africa will in general component numerous significant entertainers, like scholarly organizations, banks or monetary establishments, limit improvement suppliers,

enterprises or corporate establishments, innovation finance foundations or benefactor offices, establishments, government offices, financial backers, exploration and warning suppliers, media, area affiliations and microfinance establishments (Aspen Network of Development Entrepreneurs). A solitary nation might have different biological systems, with more movement in urban communities than in rustic regions, or limits that stretch out across borders (Park et al, 2017)

Environments are pertinent to hub effect. In the first place, tech hub points are regularly entrusted with filling biological system holes, so understanding the qualities, shortcomings and necessities of the environment will assist centres with figuring out where and how to intercede (Csikszentmihalyi et al., 2018) Secondly, environments are situated around a reason.

In Kenya, for instance, the ICT biological system is related with building new companies, financial development and producing social effect (Marchant, 2015). In Nairobi, where a lot of Kenya's tech fire up action is focused, there are two discrete, yet related, networks. One is made out of friendly ventures and targets social effect; the other spotlights on ICT and tech new businesses (Park et al., 2017).

## **2.5 Entrepreneurship and Innovation**

This turf of business venture has seen a lot of work done here for quite a long time. It is fascinating to take note of that a portion of the initial and most unmistakable scholars in the field all had very varying perspectives on the idea, and rather differentiating meanings of the concept.

Jean-Baptiste, considered as the main individual to formulate the expression "business person" in the 1800s, was of the assessment that the job of the business visionary is that of a facilitator (Henrekson & Stenkula, 2016).

Schumpeter then again, considered by majority in recent times to be the 'dad' of business research, had changing perspectives between his initial and later work, but by and large he saw the business person as a trend-setter (Schumpeter, 1947). Two other foremost unmistakable analysts are Knight and Kirzner, they considered the two be as an arbitrageur and as somebody working under consistent vulnerability, separately (Kirzner, 1999; Knight, 1921). Notwithstanding, regardless of the measure of examination that has been carried out within in the domain of business venture, there is presently no unified ordinarily concurred meaning of what precisely a business visionary does or the attributes they ought to have.

The Global Entrepreneurship Monitor (GEM) is as of now the world's driving frame for contemplates on business venture. Jewel is a believed asset for significant global bodies in likes of the World Bank, the United Nations and the OECD (for Economic Co-activity and Development), giving bespoke datasets, uncommon reports and well-qualified assessment on business venture (Peroni et al., 2017). They characterize a business visionary as "an individual with the vision to see a development, and the capacity to offer it for sale to the public" (Global Entrepreneurship Index, 2017 p.17), and this is likewise the description which is suitable to be applied with the end goal of this review. Diamond examined the significance of the intentions of business visionaries, and make an exceptionally clear differentiation amid need business visionaries and opportunity business visionaries, and weight on the way that the last are the ones

they remember for their definition. Diamond's meaning of a business visionary (i.e., the chance business visionary) is the kind of business visionary intriguing to take a gander at with the end goal of this review, since the innovation movement is the thing that is being investigated.

Opportunity business people are bound to work in a creative way, as need business visionaries by description do not convey a genuinely new thing to the market, yet may relatively be viewed as working non-innovative Small and Medium-Scale Enterprises (SMEs) (Henrekson & Stenkula, 2016). Another motivation behind why opportunity business people explicitly are intriguing to check out with the end goal of this review, is on the grounds that they imagine adaptable, high-development organizations, and opportunity business has an optimistic connection to monetary development (Ács et al., 2017). Along these lines, this is the sort of business which would should be empowered and elevated to drive a creating economy forward. Development is an idea firmly identified with business. As referenced above, Schumpeter saw the business person as a trend-setter, thus somebody who brings a novel thing to the marketplace. In his initial work, he contended that innovations are new items that profoundly transformed humanity (Schumpeter, 1934 initially distributed 1911), this could incorporate developments like the presentation of vehicles or the web. He later changed his perspective nonetheless, and expressed that likewise more modest creations or adjustments of existing items could be characterized as developments (Schumpeter, 1947).

Many presently, even concur that novelties do not really emanate as tangible items or administrations, however that development can happen through changing the manner in which organizations work with specific cycles, or plans of action, for instance. Chesbrough (2010)

keeps up with that a similar innovation or item taken to advertise through two distinctive plans of action, will yield two unique monetary results. Thusly, he states, it bodes well for organizations to improve their plans of action.

Another significant perspective addressed by Schumpeter, is the way that an invention, by explanation, lacks qualification be viewed as a development until it is popularized. He contends that it is of most extreme significance to recognize the "creator" from the "business visionary". While many individuals can have thoughts and concoct a novel, new thing, it is eventually the business person who finishes things by executing the creation available, so, all in all it very well may be viewed as a development (Schumpeter, 1947). As referenced, an undeniable degree of development in a general public is accepted to be a driver of monetary development. As indicated by GEDI, significant viewpoints for state run administrations to zero in on to advance development, incorporate animating cooperation among colleges and industry, and putting resources into Research and Development (Ács et al, 2017). Nonetheless, it is one thing to have a climate which supports development, where thoughts can undoubtedly stream and individuals are urged to think inventively, and one more to make a steady establishment for business visionaries where organizations can genuinely prosper. This is the place where the established climate comes in to play, and fundamentally affects the capacity of new companies to enhance.

## **2.6 Some Environmental and Institutional Factors Affecting Innovation in the Entrepreneurial Ecosystem – The GEI (Global Entrepreneurship Index) Pillars**

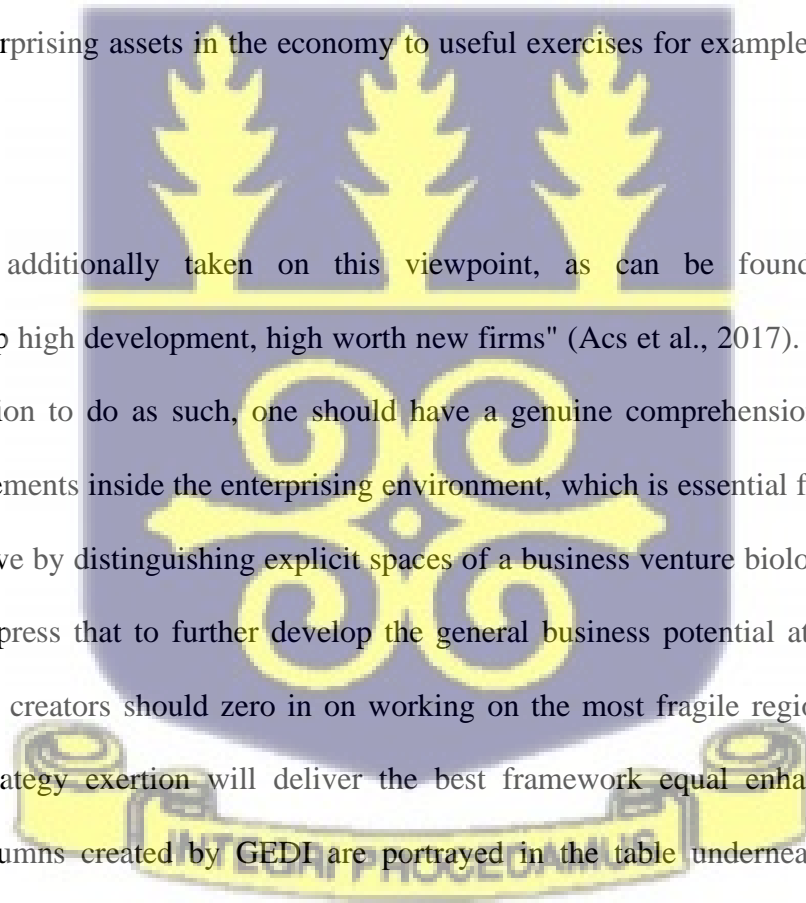
Pioneering action is to a great extent subject to the institutional climate in a nation (Henrekson, 2007). One such prior specialists who has a great extent contributed to the innovation of this

opinion is William J. Baumol. Past studies used to infer that a stoppage in financial development was because of a decrease in business, which happened for obscure reasons.

Baumol notwithstanding, presented the thought that innovative action relies intensely upon "the guidelines of the game" thus, the common prize design in the economy, for example factors that are generally moulded by strategy (Baumol, 1990). These formal rules (strategies), alongside more casual standards, are made by organizations with the point of lessening vulnerability, and they will in general give the two motivations and obstructions in the climate (North, 1990).

As indicated by Baumol, the assignment for policymakers lies in recognizing and apportioning satisfactory enterprising assets in the economy to useful exercises for example development (on the same page).

The GEI has additionally taken on this viewpoint, as can be found in the Global Entrepreneurship high development, high worth new firms" (Acs et al., 2017). Be that as it may, to have the option to do as such, one should have a genuine comprehension of the different elements and elements inside the enterprising environment, which is essential for what GEDI are attempting to give by distinguishing explicit spaces of a business venture biological system. Ács et al. (2014) express that to further develop the general business potential at the public level, public approach creators should zero in on working on the most fragile regions, as that is the place where strategy exertion will deliver the best framework equal enhancement. The 14 institutional columns created by GEDI are portrayed in the table underneath, and the eight institutional as well as ecological elements are the ones that will be investigated further corresponding to the instance of the pioneering biological system in Ghana.



**Table 2.2. The GEDI institutional pillars.**

<b>Pillar 1: Opportunity Perception</b>	Can the population identify opportunities to start a business and does the institutional environment make it possible to act on those opportunities?
<b>Pillar 2: Start-up Skills</b>	Does the population have the skills necessary to successful ventures? launch
<b>Pillar 3: Risk Acceptance</b>	Are individuals willing to take the risk of starting a business? Is the environment relatively low risk or do unstable institutions add additional risk to starting a business?
<b>Pillar 4: Networking</b>	Do entrepreneurs know each other and how geographically concentrated are their networks?
<b>Pillar 5: Cultural Support</b>	How does the country view entrepreneurship? Is it easy to choose entrepreneurship or does corruption make entrepreneurship difficult relative to other career paths?
<b>Pillar 6: Opportunity Start-up</b>	Are entrepreneurs motivated by opportunity rather than necessity and does governance make the choice to be an entrepreneur easy?
<b>Pillar 7: Technology Absorption</b>	Is the technology sector large and can businesses rapidly absorb new technology?
<b>Pillar 8: Human Capital</b>	Are entrepreneurs highly educated, well trained in business and able to move freely in the labour market?
<b>Pillar 9: Competition</b>	Are entrepreneurs creating unique products and services and able to enter the market with them?

<b>Pillar 10: Product Innovation</b>	Is the country able to develop new products and integrate new technology?
<b>Pillar 11: Process Innovation*</b>	Do businesses use new technology and are they able to access high quality human capital in STEM fields?
<b>Pillar 12: High Growth</b>	Do businesses intend to grow and have the strategic capacity to achieve this growth?
<b>Pillar 13: Internationalisation</b>	Do enterprises want to enter global markets and is the economy complex enough to produce ideas that are valuable globally?
<b>Pillar 14: Risk Capital*</b>	Is capital available from both individual and institutional investors?

Source: adapted from Ács et al., 2017

### Risk Capital

Admittance to monetary capital is regularly seen as one of the main variables for a productive business environment. A ton of exploration has been led on the effect of monetary investment, both on passage into business yet in addition on the endurance and food of new companies and set up SMEs. Discoveries from considers in other emerging nations recommend that to urge individuals to wander into business inside a general public, policymakers ought to underscore admittance to monetary investment (Cetindamar et al., 2012). The degree of accessibility of monetary capital has additionally been demonstrated to possess an optimistic association with the presentation of previously existing SMEs (Fatoki, 2011).

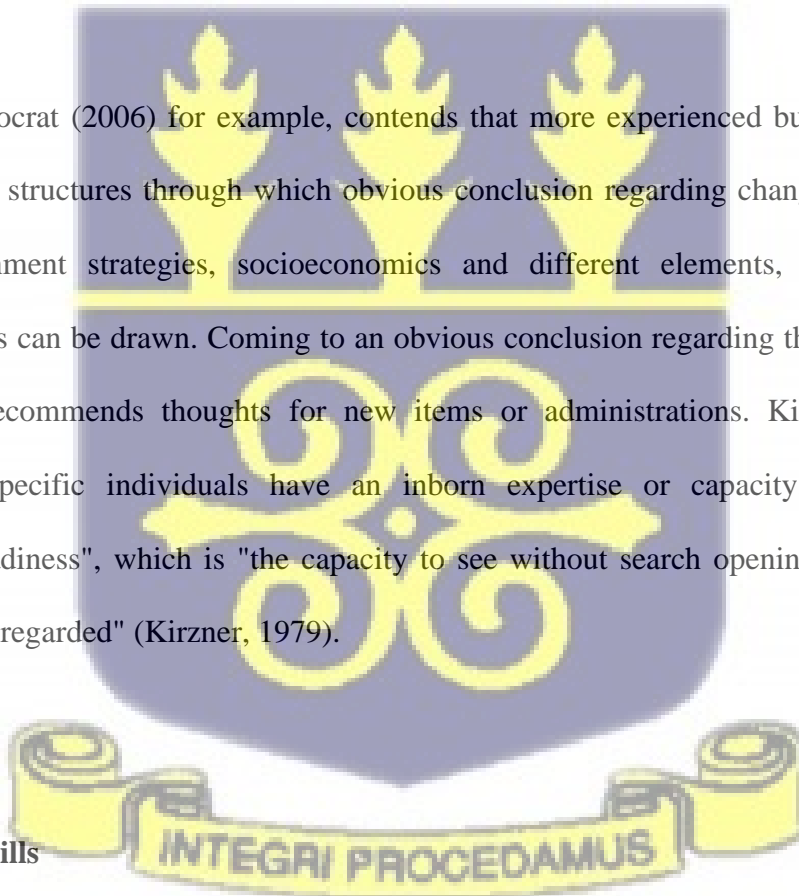
### 2.6.1 Opportunity Perception

The space of chance insight manages whether individuals in a general public can recognize openings, and furthermore whether the institutional climate within that social order makes it feasible for individuals to follow up on those chances (Ács et al, 2017). As indicated by Aces et al, (2018) in the GEDI 2018 report, Ghana scores the most elevated in a promising circumstance discernment, out of each of the 14 columns. Albeit the establishments in a nation might influence significantly the capacity of individuals to seek after existing freedoms, various analysts demand that the capacity to recognize the chances in any case, has more to do with individual qualities, intellectual capacity and additionally how encountered the business person is.

Parrot and Aristocrat (2006) for example, contends that more experienced business visionaries have intellectual structures through which obvious conclusion regarding changes in innovation, markets, government strategies, socioeconomics and different elements, better than their incipient partners can be drawn. Coming to an obvious conclusion regarding these patterns then, at that point, recommends thoughts for new items or administrations. Kirzner then again, accepted that specific individuals have an inborn expertise or capacity, that he named "enterprising readiness", which is "the capacity to see without search openings that have until recently been disregarded" (Kirzner, 1979).

### 2.6.2 Fire up Skills

Dispatching an effective endeavour requires the likely business visionary to have the fundamental start-up abilities. As indicated by Nam & Lee (2017) in the Global Entrepreneurship



Index 2017 report, the vast majority in non-industrial nations accept they have the essential abilities to begin a business, yet their abilities are regularly procured through experimentation in the working environment, and generally through moderately straightforward business exercises. In actuality, business arrangement, the board, activity, and so on in created frugalities, are exercises which necessitate abilities that are obtained through conventional instruction and preparing (Ács et al, 2017). In this way, schooling, particularly postsecondary training, assumes an imperative part in instructing and creating enterprising abilities.

### 2.6.3 Social Support

Social help for business venture can likewise be depicted as the degree of "social acknowledgment" for wandering into a business as a profession. At the end of the day, how is business seen in a country? How simply it could be wander into, or how hard is it to pick contrasted with other vocation ways? Jackson and Rodkey (1994) portray how this social acknowledgment is a significant factor in the innovation of novel organizations inside a nation. Examination has indeed revealed a positive relationship between the degree of acknowledgment of business venture, and the degree of affinity to take part in undertakings in a given civilisation (Shane, 2003).

### 2.6.4 Opportunity Start-up

The chance beginning up-column is worried about the inspiration driving beginning a business. As recently referenced, GEM make an unmistakable differentiation among need and opportunity business visionaries. As per them, a few business visionaries become business visionaries predominantly due to legitimate need, since they have no other choice for bringing in cash in the

work market (Acs et al., 2017). These business people are commonly brokers, little retailers, for example independently employed entrepreneurs who recreate what is being done already by others. The other persuasive factor is that of chance. Business people who are inspired by a promising circumstance are the individuals who imagine versatile high-development organizations that bring a novel, new thing to the market.

The contention of need and opportunity business visionaries can be identified with the wide writing banter on push-versus pull-variables of business venture, where need business people are accepted to be "pushed" toward independent work because of an absence of choices, and opportunity business people are somewhat "pulled" into business venture for more sure reasons identified with market openings or individual independence (Dawson and Henley, 2012). So how might these variables be broke-down with regards to emerging nations? As indicated by Dawson and Henley, this is propelled normally during times of financial emergency and additionally intensifying joblessness whereby people are driven into business, without any other work openings (Dawson and Henley, 2012).

Consequently, it very well may be accepted that need business, for example independent work brought about via push-factors, happens to a more serious level in nations with high joblessness rates. Eijdenberg and Masurel (2013, p.20) have additionally tracked down that earlier examination on enterprising inspiration in less created nations regularly demonstrates that people are constrained into business by need related components. In Eijdenberg and Masurel's examination notwithstanding, they established that push and pull factors are not totally unrelated for business visionaries in less created nations (Eijdenberg and Masurel, 2013 p.21).

### 2.6.5 Innovation Absorption

In the present society, data and correspondence advances (ICT) assume a pivotal part in monetary turn of events (Ács et al, 2017). Not all nations give similar opportunities to new companies to endure and for set up organizations to develop. The innovation retention part, is worried about how huge the innovation area is in a given nation, just as regardless of whether organizations can quickly assimilate new innovation. The dissemination of new innovation in a general public, and the capacity of businesses to ingest it, is crucial for inventive new companies possessing high development potential (Coad and Rao, 2008). In 1994 Ghana developed into one of the main African countries to change and liberate its telecoms area (Benfratello & Baidoo, 2020).

This was a significant advance taken by the public authority to accept the capability of cutthroat business sectors, to produce development and innovation in the area. Today, the business is grounded and portable and versatile information entrance is high, giving an assortment of content to buyers and posting consistent development (Bruhi, 2017). Geographic inclusion and organization extension is being pushed forward, both by open and privately owned businesses, while lately, administration improvement has been a specific focal point of the public authority.

### 2.6.6 Item Innovation

New items assume a significant part in the economy of nations. Developed nations were once the wellspring of most up to date items, nonetheless, agricultural nations are today delivering items that are altogether less expensive than their western reciprocals (Ács et al, 2017). An issue regularly examined concerning business in emerging nations notwithstanding, is that a



considerable lot of the items and additionally benefits are not new, but instead duplicates of previously prevailing ones. The item innovation part offers the conversation starter, is the country ready to foster new items and coordinate new innovations?

### **2.6.7 Cycle Innovation**

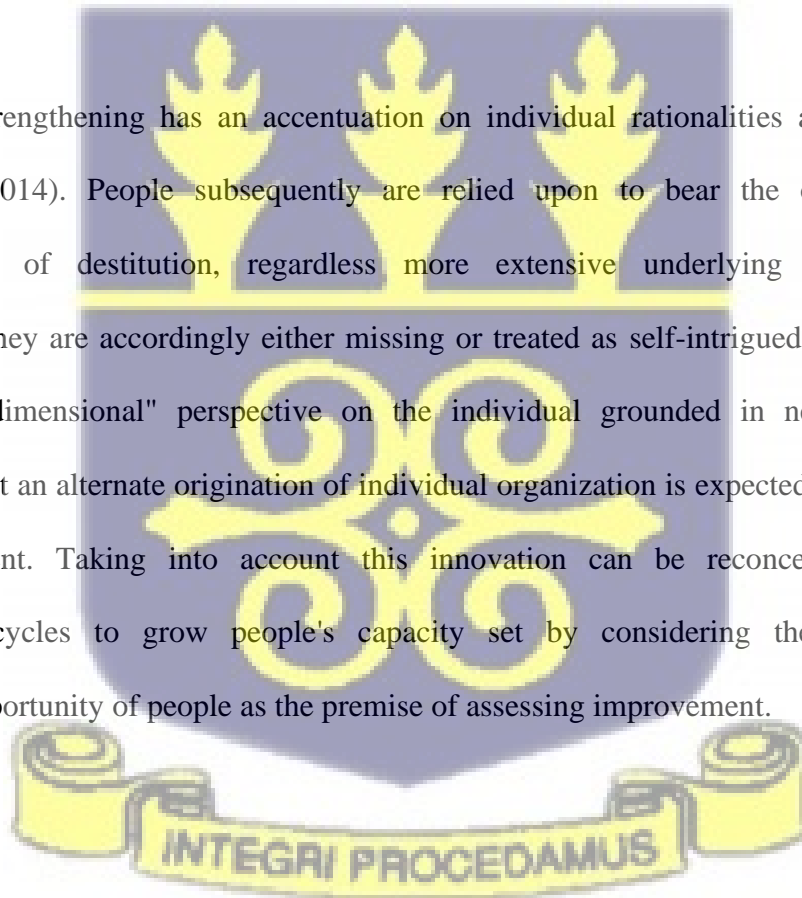
Applying as well as making new innovation is one more significant component of high-development potential new businesses. The principal part of the cycle development part manages whether or not organizations in a nation utilize new innovation. At the end of the day, are new innovations accessible to business visionaries in a specified civilisation? The second issue of the part is whether or not organizations can get to excellent human resources in STEM fields. This inquiry is particularly pertinent for non-industrial nations and especially Ghana, as 'human resources' was the most fragile space of every one of the 14 parts for the nation in the Global Entrepreneurship Index 2017. Hence, as per Ács et al. (2013), working on the quality and accessibility of human resources would be the most imperative angle for strategy creators in Ghana.

### **2.7 The invisibility of people in innovation**

Revisions on innovation are portrayed by what is introduced as the imperceptibility of "individuals" in development (Agnete Alsos, Ljunggren, and Hytti, 2013), implying that most investigations neglect to zero in on the one enhancing, that is, the singular degree of innovation. Blake and Hanson (2005) contend that developments do not occur in a vacuum and are results of individuals who are implanted specifically in sociocultural settings. This recommends the requirement for a more extensive comprehension of development, one which does not restrict innovation with simply financial and innovative arrangement (Steyaert and Katz, 2004).

While the business venture writing hubs around business people as people, they are typically conceptualized as a homo financial matter, that is, reasonable, hazard taking people looking for benefit amplification, passing on little contemplations to social, social and institutional settings of business venture. As per Read (2009), Foucault makes reference to that "Homo economicus is a business person, a business person of him-self being for himself his own capital, being for himself his own maker, being for himself the wellspring of [his] profit (p. 26)." Entrepreneurs are individuals who need to react to advertise changes and bear the related dangers (Dejaeghere and Baxter, 2014). In the Global South, business visionaries are accepted to try to augment their own abundance, yet in addition strengthening and organization.

This type of strengthening has an accentuation on individual rationalities and independence (Altan-Olcay, 2014). People subsequently are relied upon to bear the obligation to get themselves out of destitution, regardless more extensive underlying and institutional requirements. They are accordingly either missing or treated as self-intrigued monetary normal being, a "one-dimensional" perspective on the individual grounded in neoliberalism. The contention is that an alternate origination of individual organization is expected to get innovation and improvement. Taking into account this innovation can be reconceptualised as all-encompassing cycles to grow people's capacity set by considering the prosperity and organization opportunity of people as the premise of assessing improvement.



## 2.8 African tech hub technique

The fundamental intentions in the conception and presence of tech hub points are; bricolage and asset access; systems administration and learning and limit innovation. In the first place, hubs make admittance to basic assets for casual examinations and innovations through different channels including holy messenger speculations, investment and surprisingly open subsidizing. As found for the situation contemplates, a portion of the hub points helped financing from outside offices and other enormous companies like the World Bank, CSIR and UNICEF, which was along these lines dispensed to help their clients. Significantly, the hubs worked with bricolage (Baker and Nelson, 2005) whereby their clients are upheld to recombine existing assets to conquer asset limitations. In this intellect, the hub points offer a stage for unconventional use of assets past their underlying planned use. Second, the hub points plan to advance and work with systems administration among tech business people and set out open doors for sharing thoughts and spanning admittance to assorted help for development (Sarpong and Rawal, 2020). Systems administration is especially vital in Africa where because of institutional voids; social capital fills in as a substitute for wasteful and non-existent market delegates (Acquaah 2007; Liedong et al., 2020).

At long last, the hub points are set out to give learning open doors to growing business people to foster their item and administration thoughts. They upgrade enterprising and specialized abilities through conventional preparation and casual information trade drives. To accomplish these thought processes in the midst of limitations, the hubs send different systems and strategies. To advance learning, for example, hubs increment client connections and use mentorship and preparing.

For systems administration, they embrace a casual culture to separate boundaries and siloed groups while increasing to expand the quantity of clients/individuals and the systems administration hubs. For asset access, hubs increase their outer effort to draw in and prepare financing (Atiase et al., 2018). They additionally energize dynamic ad lib and experimentation with existing assets.

These methodologies sway financial and social worth creation, yet the degree of this effect is directed by the variety of hub point clients or colleagues and the hub administration style. An assorted client base enhances information creation while a level construction expands data stream and supports quicker dynamic. They utilized on these discoveries to foster an integrative model (Fig. 2) to plan the drivers of tech hub arrangement, the procedures utilized by tech hubs, and the unforeseen impacts of tech hub techniques.

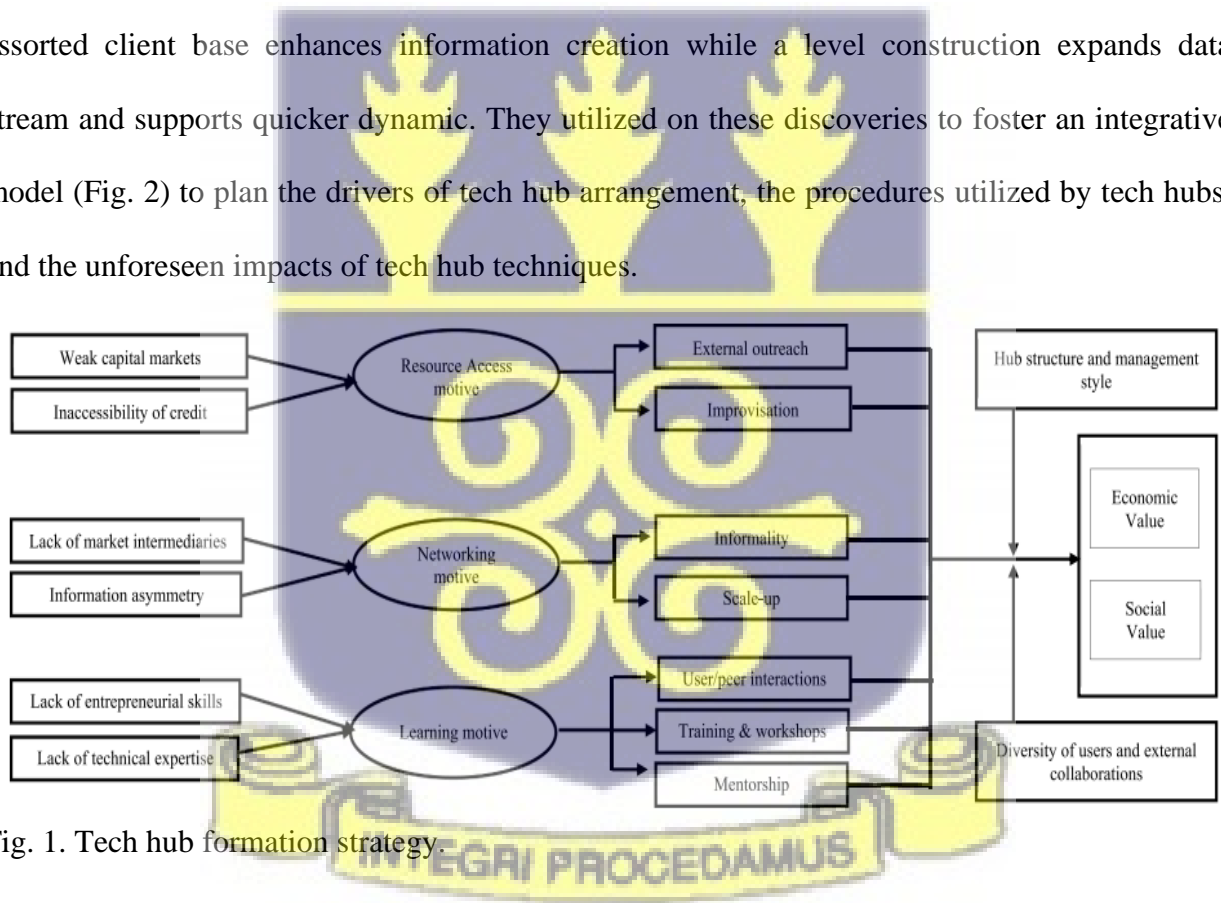


Fig. 1. Tech hub formation strategy.

## 2.9 The difficulties of hub point arrangement in Africa

While tech hub points' advantages are acknowledged, their arrangement can be troublesome. They face three principal challenges. The first is subsidizing. The capital needed to keep hub points open isn't promptly open. Africa's capital business sectors will in general take into account the requirements to huge firms whose FICO assessments are undeniable. Interests in hubs, the home of new businesses, Do it Yourself adventures and little endeavours, does not appear to be an alluring business sector recommendation for banks. Basically, there is serious rivalry for credit in African nations, with more grounded competitors and set up organizations getting more ideal treatment.

African state-run administrations, burdened with various formative issues and full of strategy disorders, do not focus on tech hubs. Charging expenses to clients is one way of stopping the subsidizing hole however doing as such invalidates the hubs' point of filling in as minimal expense elective homes for neighbourhood ability. Looking for worldwide contributor financing could likewise address the subsidizing limitations, yet this choice is unrealistic particularly when hubs have low global perceivability and helpless proof to exhibit their social effect. Generally speaking, hub points battle to discover a plan of action that works.

The subsequent test is drawing in clients. Hub points are just about as great as the quantity of clients and teammates they have. The more individuals utilize a hub point, the more the hub point can fill in as a learning and systems administration stage. Additionally, the bigger a hub point, the better its odds of drawing in outside financing. Shockingly, STI training in African

nations has not yet arrived at a point where individual interest pushes sufficient minimum number of fans to utilize hubs for sharpening their inventive thoughts.

Like the point above, hubs battle to foster linkages to outer teammates and other asset people. This makes it awkward for them to make the scaffolds that will associate clients to outer assets, data and skill, accordingly restraining their capacity to make financial worth. Linkages to government organizations benefit institutional help for commercializing the developments of tech hubs. Notwithstanding, hub government commitment give off an impression of being restricted. Moreover, Africa's tech hubs are not yet adequately incorporated in, and absorbed in, the worldwide tech scene.



## CHAPTER THREE

### CONTEXT OF THE STUDY

#### 3.1 Introduction

This current subdivision takes a dive into the context within which this exploration was undertaken. A situation for the relevance of the research of impact of tech hubs on start-ups in Ghana providing a perspective of its evolution in Africa and Ghana are discussed in this chapter as well.

#### 3.2 The development of tech hubs in Africa

One of the contemporary difficulties confronting the African landmass is the huge technological gap that exists between African nations and the remainder of the world. Overcoming this issue is pivotal to the achievement of the destitution mitigation plan in sub-Saharan Africa (You et al., 2019). The pace of innovative innovation represents contrasts in absolute factor usefulness among African nations (You et al., 2020). In the course of recent years, the all-out Research and Development (R&D) yield from low-pay nations including Africa has expanded from 2% to more than 20% (Kaplinsky et al., 2009).

#### 3.4 Evolution of Tech Hubs in Ghana

Tech hub points developed in Ghana as the utilization of the web and its applications acquired grounds in the country. The expanded network of the web and the utilization of cell phones has helped in the production of flourishing business sectors in the country. As of now the web infiltration rate remains at 46.5% which is sensibly higher than the normal of 39.3% in most African nations and the West African neighbours. Despite the fact that Ghana is by all accounts

nearly showing improvement over most African nations, Ghana actually falls behind the world's normal of 58.5 % and that of Kenya which remains at a pace of 85%.

Despite the fact that Ghana has a growing tech environment contrasted with the mainland's goliaths like South Africa, Nigeria, Egypt and Kenya, Ghana is consistently making positive in-rolls into the tech hub point biological system drawing in the consideration of numerous inner tech monsters. For example, Twitter picked Ghana as its African base camp in the capital Accra. This is obvious proof of the beginning of Ghanaian tech.

The public authority of Ghana, as a feature of its obligation to guaranteeing that innovation is settled in the Ghanaian economy set up the Accra Digital Hub in 2017 and outfitted it with two hub points the Ghana Innovation hub point and Ghana TechLab to give a brooding and gas pedal projects for new businesses. The Accra Digital Hub gives an empowering climate to new businesses to run their tasks. It presently houses 36 new companies, which appreciate limited lease costs (around 33% of the ordinary rates) with adaptable instalment plans.

The Bank of Ghana, as of late made an office for Fintech and Innovation, to drive the controller's money light, e-instalments, and digitization plan. A marker that the public authority is focused on this plan. It additionally dispatched the Fintech sandbox which gives new businesses a springboard to evaluate items without being limited by permit and capital prerequisites. The Apex bank intends to carry out the first of a three-pilot staged country's advanced cash.

Via private interest, the Meltwater Entrepreneurial School of Technology (MEST) has offered help to new companies for more than 10 years. In that time, they have had new businesses continue on to globally acclaimed programs like YC, proceeding to raise huge financing and guaranteeing a few ways out en route. In close connection to this is the Catalyst Fund Inclusive Digital Commerce Accelerator, a program that helps six business new companies scale by giving them a \$120,000 value free award each alongside a six-month adventure speed increase support.

Moreover, the Stanbic Bank Incubator, a corporate social drive by Stanbic bank Ghana, additionally gives admittance to preparing, financing and market for new businesses. Kosmos Innovation Hub (KIC) is cubed around supporting business people building Agri-tech arrangements. The Kumasi hive what began in 2015, has prepared more than 1,000 new companies up until this point. Various set up Ghanaian tech organizations like Hubtel, Farmerline, Sayetech, Green Afro-Palms started in Kumasi. Eminently, Kumasi has additionally delivered various Hardware new companies like Dext, SolarTaxi, Nastech, Sesi Technologies and Incas Diagnostics.

Via expanding the interest of ladies in tech, associations like StemBees, Developers in Vogues and Soronko Academy are preparing young ladies in programming/programming innovation, and interfacing them with open positions. The fLab Program has been planned by Innohub to advance inventive innovation business venture among females fully intent on furnishing the female possessed tech new companies with item improvement and business innovation support. The principal accomplice upheld 40 female drove tech new companies. They support business

visionaries (new companies) with imaginative, high development, and high friendly effect tech adventures that can be refined and increased through a hatchery program. The parts include:

- Product Development Training which remembers preparing for improvement of applications and programming.
- Business Development Training, tutoring, admittance to market and expert help administrations.

It is obvious that tech hub points are tremendously adding to the foundation of tech-based new companies in the Ghanaian economy consequently the need to investigate the effect these tech hub points in the country. Directing this review inside the Ghanaian setting will bring to the front a portion of the particular enterprising advancing exercises these hubs give to help the new companies.

### **Classification of Tech Hubs and Start-ups in Ghana**

Most tech hubs in Ghana have over the years gone through great transformation from being small work spaces for ICT minds to converge and explore their potentials into entrepreneurial hubs that churn out new start-up businesses on regular basis. Tech hubs can be categorised under four major groups currently; Country hubs, Institutional hubs, City/Community hubs and Company hubs. Country hubs are those purposely established by the state to provide support for ICT driven innovations which potentially translate into viable businesses that impact the socio-economic lives of its citizenry.

Institutional hubs are mostly educational units that create that enabling environment for students to explore their potentials within the ICT space to bring out innovative ideas that promotes

economic transformation. Institutions like the University of Ghana (UG), Legon, the Kwame Nkrumah University of Science and Technology (KNUST), Meltwater Entrepreneurial School of Technology (MEST) and Ashesi University are some examples of such hubs giving students the platform to unearth their potentials within the technopreneurial space in Ghana. City/community hubs are those that started within the community or city and have become so entrenched that their names are derived from the city. For instance; Ho hive, Kumasi hive, Impact hub Accra, Tamale hive just to mention a few. Company hubs are those that are established by businesses minded individuals who are providing value to clients for profit sharing purposes and other consultancy services. For example, InnoHub situated at East Legon falls under this category.

Start-ups in Ghana are categorised under the Micro Small Medium Enterprises (MSMEs) by virtue of their total number of employees which should not exceed 100 people, total assets not exceeding US\$3,000,000 and an annual turnover of US\$3,000,000 (Section 4 of the NBSSI Act 434 of 1981).

Category of Firm	Number of Employees	Total Assets	Annual Turnover
Micro	Maximum of 5	≤US\$25,000	≤US\$25,000
Small	6-29 staff	\$25,001-1,000,000	\$25,001-1,000,000
Medium	30-100	\$1,000,001-3,000,000	\$1,000,001-3,000,000

*Source: NBSSI Act 434, 1981*

Start-ups depending on their location can also be grouped as rural or urban tech-based firms.

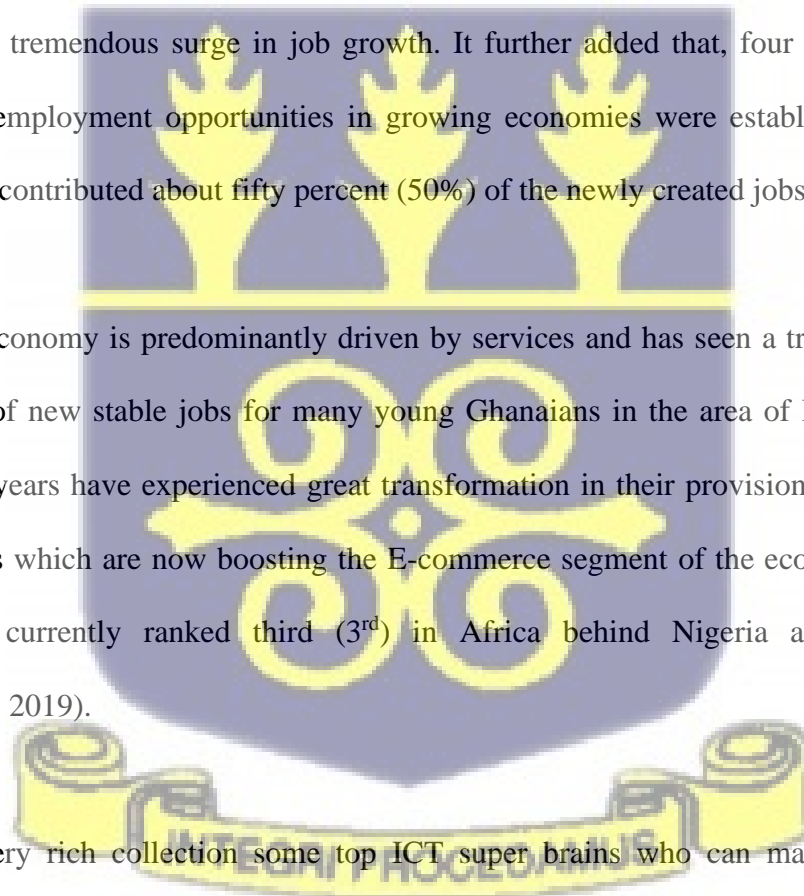
### **Contribution of Start-ups to the Ghanaian Economy**

Over the years, the creation of jobs for the citizens of a country has greatly shifted from being the sole responsibility of the central government to assume a more private sector perspective. The emergence of start-ups and other Micro Small Medium Enterprises (MSMEs) have contributed immensely to the growth and development of many national economies across the globe hence considered as integral components of these emerging economies.

According to the International Trade Centre/UN (2018), the private sector was phenomenal in the creation of about eighty-seven percent (87%) of the total employment opportunities which contributed to a tremendous surge in job growth. It further added that, four out of five newly created formal employment opportunities in growing economies were established by MSMEs and specifically contributed about fifty percent (50%) of the newly created jobs.

The Ghanaian economy is predominantly driven by services and has seen a tremendous growth in the creation of new stable jobs for many young Ghanaians in the area of ICT. The services sector over the years have experienced great transformation in their provision as a result of the digital platforms which are now boosting the E-commerce segment of the economy. In view of this Ghana is currently ranked third (3<sup>rd</sup>) in Africa behind Nigeria and South Africa (Insight2Impact, 2019).

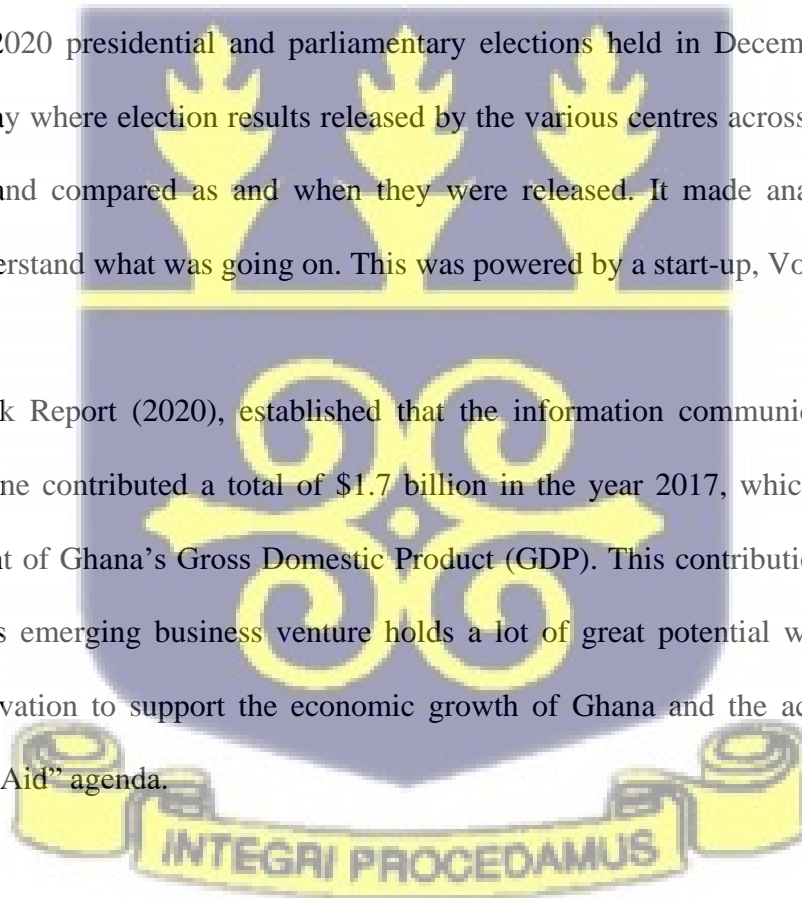
Ghana has a very rich collection of some top ICT super brains who can match-up equally to compatriots anywhere across the globe. Some of these great minds are behind some start-ups making waves in Ghana and beyond attracting positive attention globally. Some of these start-



ups are MPharma, ZeePay, AgroCentre, Dext Technology, MeQasa and others who are providing essential services across many facets like pharmaceutical, financials, agriculture, sustainable energy and accommodation. MPharma, for instance was instrumental in assisting the government of Ghana to receive the country's first batch of the covid-19 vaccines. This by all standards is a phenomenal achievement by a tech-based start-up firm.

As a result of the enormous contribution of start-ups especially tech-based firms to the economic growth of the country, the vice president of the current government H.E Dr. Bawumia is championing the digitisation agenda of the nation to move Ghana to a next level of a digitised economy. The 2020 presidential and parliamentary elections held in December last year saw innovation at play where election results released by the various centres across the country were easily collated and compared as and when they were released. It made analysis so easy for everyone to understand what was going on. This was powered by a start-up, VoteKast Africa.

The World Bank Report (2020), established that the information communication technology (ICT) sector alone contributed a total of \$1.7 billion in the year 2017, which culminated into about 3.6 percent of Ghana's Gross Domestic Product (GDP). This contribution made points to the fact that this emerging business venture holds a lot of great potential which rides on the fulcrum of innovation to support the economic growth of Ghana and the achievement of the "Ghana Beyond Aid" agenda.



### 3.5 Company profile of Innohub

Innohub which is positioned as a Commercial Accelerator, Growth Consulting and Impact Investment stage, which functions by, upholding Minor and Budding Commerce to become reasonable, versatile and project equipped, and then again fills in as a stage for coordinating with establishments to the capital required for development. In accordance with their longing to connect the early and missing hub subsidizing hole for SGBs, Innohub is the supporter of money vans like Wangara Green Venture Capital Company Limited with a \$3.2m award from the World Bank, and the Accra Angels Network. They overcome any barrier among SMEs and effect financial backers. Innohub as of late started tasks in Liberia and has given preparing to more than 100 business people in the country. Innohub at present lives it up working group of 15 youthful experts with assorted ranges of abilities, and driven by Nelson Amo, its CEO.

Innohub has after its birth, given development arranged business improvement backing and preparing administrations for new companies, SMEs, and organizations of fluctuating sizes and across a wide scope of areas like agribusiness, food handling, coordination the executives, oil and gas support, clean energy, Information Technology, and so on The help they give has assisted such organizations with refining their plans of action, sought after practical and versatile development ways, made uncontested business sectors, and raised capital from financial backers to help their development and scaling plans.

Aside from supporting individual endeavours, Innohub has functioned through associations like British Council, French Development Agency, Solidaridad, GIZ, and so forth to give business hatching administrations to more than 100 Small and Growing Businesses

**Vision Statement:**

To be Africa's World class inventive business development impetus and effect venture stage.

**Statements of purpose:**

- To give inventive business support administrations and projects for Small and Growing Businesses to accomplish development and effect.
- To give quality deal flow to financial backers.



## CHAPTER FOUR

### METHODOLOGY

#### 4.1 Chapter Synopsis

The focal point pertaining to the past section examined the hypothetical focal point to be applied to this review. This section examines the exploration approach utilized for this review. The exploration worldview shall be introduced foremost, trailed by an examination plan then technique and how information shall be gathered and broke down. A rundown on the part is given as the last segment to the current section.

#### 4.2 Research Paradigm

Investigation Paradigms, which are likewise alluded to as philosophical suppositions is indispensable in directing each very much educated exploration as it frames the premise whereupon the examination is planned and led (Creswell, 2013). Standards characterize what the researcher plans to examine and the way where it ought to be contemplated (Boateng and Boateng, 2014). As indicated by Guba and Lincoln (1994), a worldview is a bunch of convictions around the idea of what the 'universe' is like and the singular's place in it just as the potential connections to that biosphere and its part and furthermore in the perspective of Creswell (2009), this perspective point is an overall direction around the universe and the idea of examination that an investigator holds.

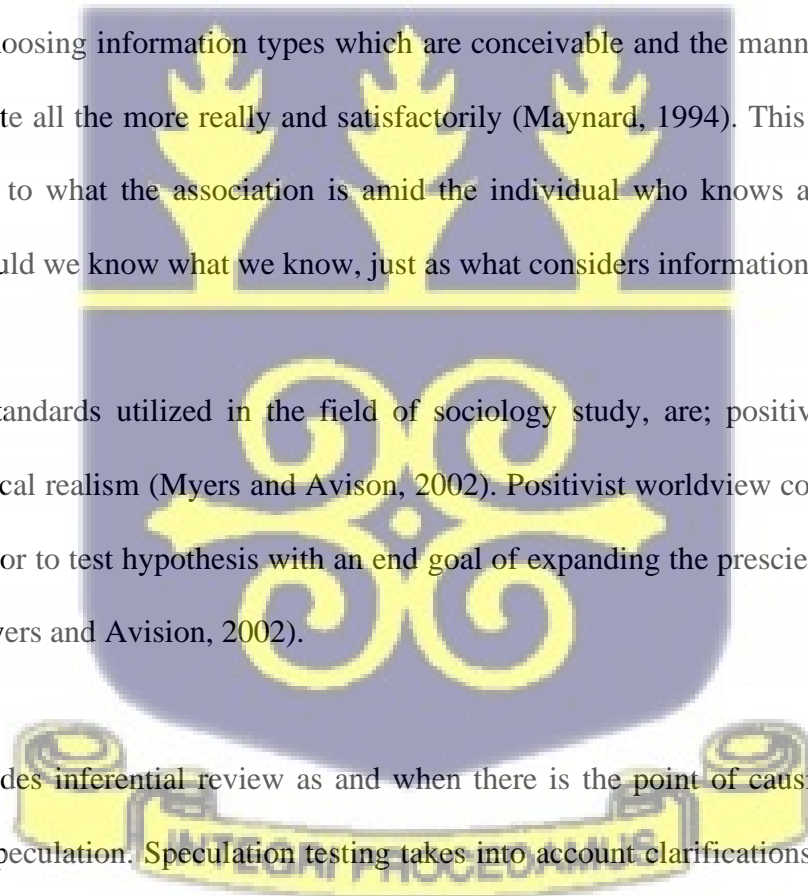
The utilization of standards in examination can be ordered into three (3), these are; philosophy, epistemology and approach. There is a connection among metaphysics and procedure; Ontology alludes to "a hypothesis of social elements that is worried about what exists to be researched"

(Walliman,2006,). This obviously includes one's way of thinking of what actually and how one sees reality (Krauss, 2005; Wahyuni, 2012) regardless of the fact that it is outside or a development of one's brain (Jonker and Pennink, 2010). System then again presents the means used to procure information on the truth which either be quantitative, subjective or blended strategies.

Epistemology alludes to "a method of comprehension and clarifying how we know what we know" (Crotty, 2020). The viewpoint of epistemology is worried about what is viewed to be adequate information in a field of study (Bryman, 2008). The epistemology gives a theoretical foundation in choosing information types which are conceivable and the manner the analyst can lead a concentrate all the more really and satisfactorily (Maynard, 1994). This standard seeks to discover replies to what the association is amid the individual who knows and what is really known, how would we know what we know, just as what considers information.

The principal standards utilized in the field of sociology study, are; positivist, interpretivist, realism and critical realism (Myers and Avison, 2002). Positivist worldview concentrates by and large the endeavor to test hypothesis with an end goal of expanding the prescient comprehension of a wonder (Myers and Avison, 2002).

Positivism includes inferential review as and when there is the point of causing derivations to detail and test speculation. Speculation testing takes into account clarifications and speculations to be made and inspected under various conditions. Interpretive worldview then again

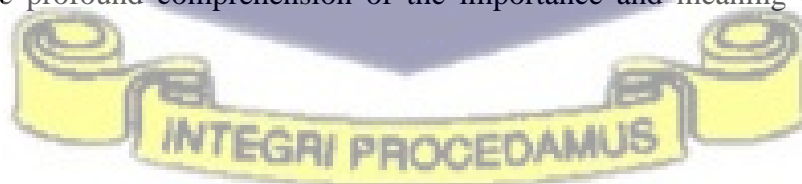


distinguishes individuals' impression of how they perceive the Universe and the constructions and cycles that occur inside it (Fisher, 2010).

Realism; This examination theory expresses the reason that, authenticity and actuality depend on the faculties. By way of thinking of a positivist is that it expects logical ways of dealing with innovation of information. It is otherwise called post-positivism (Crozier, Denzin, and Lincoln, 1994) or neo-post positivism (Miles and Huberman, 1994) research theory. This supposition supports the technique with which information is gathered and furthermore addresses how the information is deciphered. Realism is normally connected with evaluation, yet it is viable with numerous subjective strategies.

Critical realism in anyway presents a system for the utilization of an assortment of techniques to acquire a more profound comprehension of the importance and meaning of data frameworks in the present-day world (Mingers et al., 2013).

Ensuing from the above conversation, this focus hence assumes the position of an interpretivist in accomplishing the reason for the investigation of investigating the effect of tech hub points on technopreneurship in Ghana. The decision of utilizing an interpretivist approach in this review will give a more profound comprehension of the importance and meaning of the chose case stage.



An exploration configuration in the view of Zikmund (2003) essentially alludes to the structure for gathering, examining and deciphering information. It directs analysts to gather information in

the correct way and to utilize them fittingly to answer their established research questions which will additionally empower them to achieve their exploration targets (de Vaus, 2001). Distinctive exploration strategies might yield various degrees of discoveries; these supposed techniques are quantitative, subjective and then blended approaches (Creswell, 2009).

Quantitative examination essentially tries evaluating reviews which places mathematical worth to the degree to which an occurrence either happens or not happen (Jonker and Pennink, 2010). Likewise, quantitative strategies will in general quantify contrasts among factors and help with understanding the meaning of those distinctions. Factual measures can along these lines be utilized to contrast mathematical contrasts all together with decide their level of importance (Glitz, 1997). Subjective techniques then again give space for adaptability and fluctuation in making translations which are fundamental in the comprehension of sociology wonder.

This is steady with an interpretivist point of view and the possibility that it is profoundly adaptable. An examination issue should be investigated when there is nearly nothing or very little known on the point being considered, when the factors are to a great extent obscure and the specialist needs to zero in on settings which might comprehensively mould of the wonder inevitably contemplated (Creswell, 1994).

Blended techniques study then again is a methodology that gives a mix of both quantitative and qualitative strategies in a similar exploration study to give rich experiences into different marvels of outcomes that cannot be completely perceived utilizing just quantitative or subjective strategy (Venkatesh, Brown, and Bala, 2013). The Blending measure happens by merging subjective and

quantitative components, coordinated toward giving a more extensive record and answer for the exploration issue (Glogowska, 2011; Zhang and Creswell, 2013). In joining subjective and quantitative information, Teddlie et al., (2009) is of the view that, blended strategies investigation assists with settling the shortcomings found in utilizing a solitary exploration plan technique to comprehend the examination issue.

This review takes on the subjective strategy style as it tries to get issues or specific circumstances by researching the viewpoints and conduct of individuals in circumstances and the setting inside which they act (Kaplan and Maxwell, 2005). Moreover, the review is made as a contextual analysis to investigate the effect of tech hubs on tech-put together business based with respect to a reasonable structure created from the dispersion of development hypothesis.

The worth that can be gotten from utilizing a subjective contextual investigation approach is that it considers a top to bottom comprehension of what is being examined to be seen inside the exploration as the client sees, encounters, or gets their reality. (Levitt, 2015).

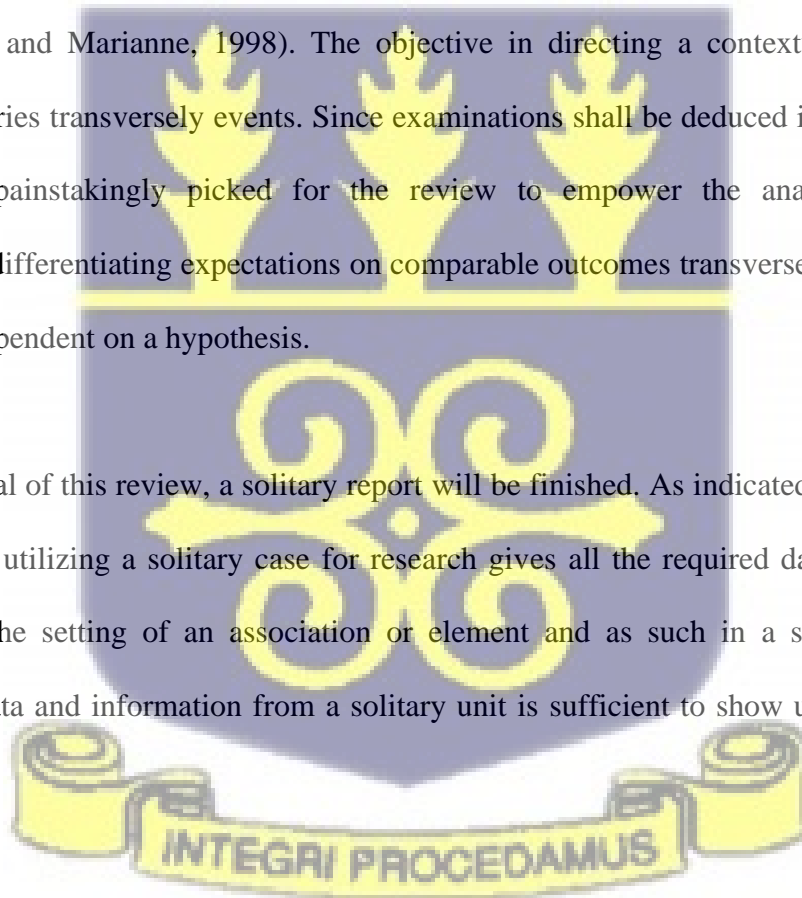
#### **4.4 Case Study as a Research Method**

The focal point of this review is to investigate the Impact of Tech Hubs on Tech-based business venture in Ghana and to distinguish the inspiration and results for the people who take part in it. Having distinguished the focal point of this review, contextual analysis research is additionally recognized as being proper to embrace this review remembering Yin's (2009) meaning of contextual analysis research just like a best procedure for a specialist in discovering replies to "how" or "why" linked exploration queries, particularly in instances where the analyst has

practically no power over occasions in situations where the hub is a modern-day marvel inside a reality. Contextual investigations are more fit to "how" and "why" questions which can be logical in nature. "This is on the grounds that such inquiries manage functional connections waiting to be followed over the long haul, as opposed to simple recurrence or occurrence" (Yin, 2003, p.6).

Contextual investigations can anyway be created as far as configuration to one or the other be "single-event" or various event (Easton, 2010). Single-events are utilized in examples involving situations where there are no events for duplication where as numerous case plans permit cross-event examination and correlation, and the examination of a specific marvel in assorted sceneries (Darke, Shanks and Marianne, 1998). The objective in directing a contextual analysis is to recreate discoveries transversely events. Since examinations shall be deduced it is important that the cases are painstakingly picked for the review to empower the analyst make either comparative or differentiating expectations on comparable outcomes transversely the discoveries of the review dependent on a hypothesis.

With the end goal of this review, a solitary report will be finished. As indicated by Al Kilani and Kobziev (2016) utilizing a solitary case for research gives all the required data about research question from the setting of an association or element and as such in a solitary contextual investigation, data and information from a solitary unit is sufficient to show up at the points of the exploration.



#### 4.4.1 Case Study Design

Yin (2009) characterizes a contextual analysis as a request to experimentally examine a contemporary exploration inside its genuine setting, particularly when the limits among marvel and setting cannot be obviously settled. Quite a substantial number of positive benefits exists in utilizing contextual investigation intended for research particularly in the turf of data frameworks. The advantages as indicated by the scholar Onatu (2013) are as per the following;

1. Empowers analysts to concentrate on the frameworks in its regular state and to create hypotheses after training;

2. Empowers investigators to reply "how" and "why" queries, to acquire top to bottom data regarding the contemplated subject;

3. Empowers researchers in comprehending the landscape and intricacy of the cycle occurring. These may include people (businesses/workers), occasions (choices or projects) or elements (gatherings or associations). Choosing the case stages for this review depends on the exercises carried out on the stages representing qualities evidently occurring within the stage environment as accentuated by (Benbasat et al., 1987).

Corresponding to the fundamental examination question, the essential units of investigation of the review in Ghana were suppliers of tech hub point stages and the investigation sub-points are the singular tech-based firms that address the proposal of administrations just as the solicitation

for administrations or undertaking to be conveyed by utilizing the stage for the linkage between specialist organizations and administration lobbyists.

#### 4.4.2 Deciding on the Case Platform for the Study

Leading each contextual investigation requires the utilization of specific choice measures (Benbasat et al., 1987). This research hence adopted the utilization some determination models to pick the case stage. The study adopted a single case study approach. This was to enable the researcher explore the case with the ability to analyse the data within the case analysis, between case analysis and make a cross-case analysis. This eventually empowers the researcher to look at subunits that are located within a larger case (Yin, 2003).

To qualify as a case stage, the hub must be an innovatively oriented association and worked for a duration of say a year; and should work with the inventory of help to new companies or request the administrations of tech-hubs as an emotionally supportive network to work well.

This rule was utilized as a guarantee that the picked stage satisfies the models to be measured as a tech hub stage. The last case stage that was ready and willing to take an interest and which met the above model is InnoHub Ghana and selected start-up firms who are making some positive impacts in the Ghanaian technopreneurial space and beyond.

##### 4.4.2.1 Sampling Technique

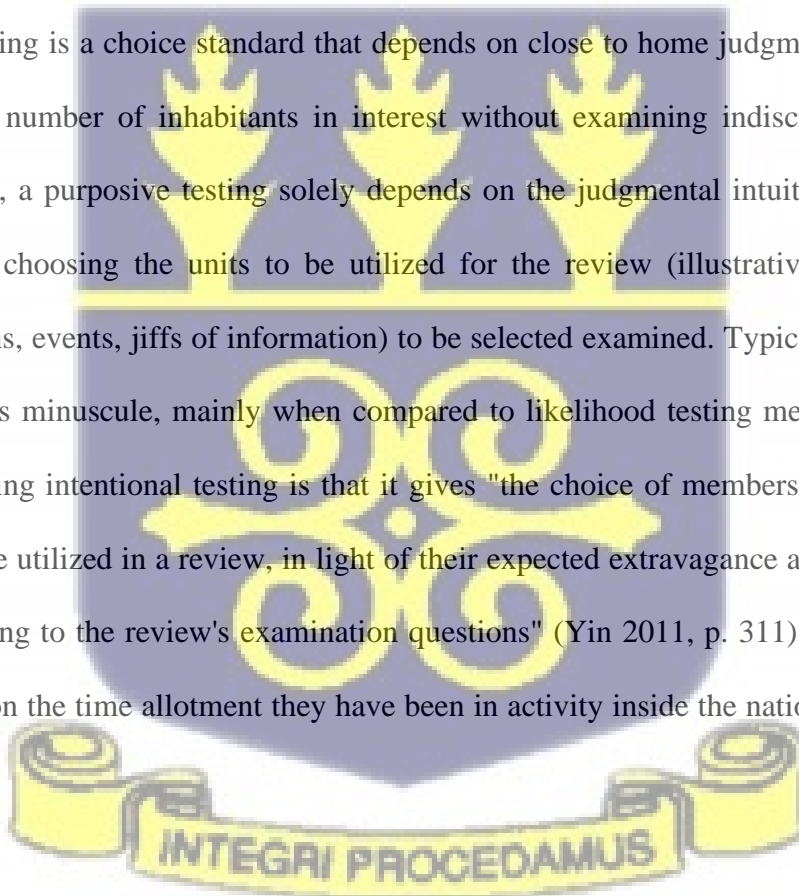
Test in research alludes to any gathering on which data in regards to the review is gained (Johnson, 2001). Received outcomes from the example may be utilized in postulating speculations viewing the whole populace once it gives a genuine portrayal of the populace (Creswell, 2009). Subsequent to recognizing the destinations where respondents can be reached,

a convenience sampling testing was then utilized to waitlist the real locales that were utilized in the review. The milieus that were shortlisted depended on topographical closeness, time and comfort. Milieus nearer to the investigator turned out to be preferable choices eligible where as those that seemed further away from the specialist dismissed if cannot be reached on phone. As underlined by Given (2008), convenience sampling is a sort of nonprobability inspection wherein respondents of the populace utilized under a review are effectively open to the specialist and in the perspective of Dörnyei, (2007), admittance of participants depends on useful rules, like simple openness, topographical vicinity, accessibility at a given time, or the eagerness to take part in the review. In light of these elements the information assortment zeroed in on regions that were in nearness to the researcher and furthermore utilized the utilization of the telephone sometimes where actual availability was hard to accomplish. Having recognized the locales from which respondents will be reached for an interview, the specialist then, at that point, utilized the utilization of the accompanying testing methods to show up at the last respondents utilized in the review.

The purposive sampling technique, also known as judgment sampling is described as “a deliberate choice of a participant due to the qualities the participant possesses” (Etikan, Musa & Alkassim, 2016, p. 2). Punch (2004) noted that when it comes to strategy, the selection of respondents must be integrated into the objectives of any research, and the justification for sample selection needs to be consistent with the perspectives of axiological, epistemological and ontological with the aims of the study. In qualitative studies, relatively few and a purposively chosen sample may be adopted (Hagaman & Wutich, 2017), with the intention of increasing the level of understanding (Palinkas et al., 2015). Purposive sampling is usually used to select the

respondents that are most likely to yield the correct and useful information (Kelly, 2010), this is a form of identifying and selecting cases that will make use of resources effectively for limited research (Palinkas et al., 2015). A purposive sampling strategy sways away from any form of random sampling which forms part of the final sample in the study (Schreier, 2018). The aim of employing a purposive strategy was premised on the assumption that the stated objectives of the study, specific kinds of people are more likely to have different and important views about the ideas and issues been addressed and therefore need to be included in the sample (Robinson, 2014).

Purposive sampling is a choice standard that depends on close to home judgment and depicts as an agent of the number of inhabitants in interest without examining indiscriminately (Elder, 2009). All in all, a purposive testing solely depends on the judgmental intuition of the analyst with regards to choosing the units to be utilized for the review (illustratively, personalities, cases/associations, events, jiffs of information) to be selected examined. Typically, the specimen being explored is minuscule, mainly when compared to likelihood testing methods. One of the upsides of utilizing intentional testing is that it gives "the choice of members or wellsprings of information to be utilized in a review, in light of their expected extravagance and significance of data corresponding to the review's examination questions" (Yin 2011, p. 311). For the Hub, the rules depended on the time allotment they have been in activity inside the nation and proceeding as a tech hub.



With respect to the new companies, the standards likewise dependent on the span of at least one year working under any of the hub points as a tech-based firm. Taking all things together, 10

respondents, involving 1 tech hub point and 9 new companies were chosen out of the numerous who were considered to have met the models and ready to partake were utilized as conclusive participants in the review.

#### **4.5 Data Collection Methods**

Getting proof to lead a contextual analysis can radiate from various avenues; reports; documented records; interviews; direct perception, member perception and actual curios (Yin, 2009). In the view of Benbasat et al. (1987) the likewise of the view that, in leading a contextual analysis, proof should be gathered from at least two sources to help the exploration discoveries. In this review the accompanying will be utilized as the primary means for information assortment; interviews, direct perception, different wellsprings of proof and antiquities.

##### **4.5.1 Interviews**

A principal main method for getting reactions to inquiries for contextual investigation research is using interviews (Yin, 2003). The utilization of discussions creates a feasible atmosphere for the questioner to explain every question difficult to comprehend by the participant. It also additionally fills in as a method questioner will likewise comprehend the interviewees plainly through reactions they give as they pose ensuing after thought queries (Al Kilani and Kobziev, 2016). For the purpose of this review, two arrangements of part-takers were met. The previously set were the tech hub points who give the stage to the new businesses while the second set were the new companies or tech-based endeavors who utilize the stage as their help base for administrations. The purposive determination rules depended on the period of time working under the hub climate.

The analyst posed both open-ended and close-ended finished inquiries from a pre-arranged discussion guide to participants. Utilization a guide was to empower the investigator procure broad data out of the participants and the case stage. Instances of the inquiries posed included; what is the idea of tech-based innovative exercises presented by the hub point, how long they have been working under the hubs.

After obtaining consent, the interview session proceeded making use of an audio recording device to chapter segments that might be missed from the interview respondents to catch all reactions as the interview was directed utilizing oral reactions and closed by taking notes on paper to document certain central issues deduced from follow-up queries and explanation. As featured by Boateng (2014), it is vital to take notes in the course of the interactions to guarantee with certainty other applicable focuses and reactions respondents exhibit which could answer the examination inquiries and gathering the exploration destinations talked about and caught.

#### **4.5.1.1 Ethics for interview meeting**

The accompanying exploration morals which seem prudent in the conduct of this study were duly observed to solicit views from participants during the discussion. Right from start, the investigator trying to look for approval from participants had an official letter presenting him as an understudy within the Department Marketing and Entrepreneurship at the Business School Faculty, University of Ghana Legon. Also, the discussions held were at the accommodation of participants and again conducted via telephone as some interviewees could not take time of their busy schedules to have a face - to-confront meeting. Duration for the data collection meetings usually lasted between fifteen (15) to sixty (60) minutes depending on the availability of the

participants. Thirdly, before leading the discussions, participants were completely made mindful of the utilization of an audio recorder to catch reactions and their assent looked for close by composing transcriptions in a little note book. The reason for transcribing discussions in a book will fill in as locus to make follow up queries if deemed necessary. Fourthly, reports, authentic annals and relics to coordinate with proof to the realities gathered in the course of discussions will officially be looked for under the right channels before they are utilized. At last, participants were guaranteed confidentiality of data they have given.

#### **4.5.2 Direct Observation**

The researcher likewise utilized direct perception particularly on account of talking to the new companies. These immediate perceptions were done when the researcher visited the work areas of these associations. Direct perception was subsequently valuable in seeing a portion of the exercises in the hub point up-close and personal for a better appreciation of their activities.

#### **4.6 Data Collection**

Information assortment went on for a time of one month; starting in the first seven day stretch of September 2021 and finishing off with first week in October 2021. Information was fundamentally gathered by means of discussions which were subsequently translated. As stressed by the scholar Boateng (2014), notes were taken close by the audio recording as respondents gave their reactions to the inquiries after which the notes were figured out and sorted to recognize other significant focuses and reactions expressed by participants that could address the examination inquiries in gathering the exploration targets. Remembering the exploration questions, the respondents were sorted into two gatherings; The principal bunch included the

Tech Hub and the subsequent gathering were comprised of firms or tech-based undertakings who work under these hubs.

#### **4.7 Analysis and Interpretation of Data**

Investigating information for an examination study includes a methodical course of arranging and grouping gathered information (Greene, 2006). Information investigation entails the analyst to be satisfied with creating taxonomies and making examinations and modifications. It likewise necessitates that the analyst be available to potential outcomes and see opposite or elective clarifications for the discoveries (Creswell, 1994).

##### **4.7.1 Thematic Analysis**

Information gathered for this review was examined utilizing topical examination. Topical investigation is utilized to characterize information and present it as subjects or examples that relate the information (Alhojailan, 2012). In topical examination, the researcher makes notes and sorts them into different classifications (Duhé, 2014). In utilizing topical examination, the specialist can give an investigation of the information from a wide perusing of the information towards finding examples and creating subjects.

Interview information gathered from respondents were, interpreted and painstakingly read again and again to detect key viewpoints disseminated by respondents and how they ponder the vital topics in the examination queries. The information was additionally sorted into designs created by the researcher dependent on the examination questions. This made it simpler to distinguish likenesses and contrasts in reactions.

#### 4.8 Chapter Summary

The motivation behind this part was to introduce the examination strategies utilized in this review. The section introduced the interpretivist worldview as the worldview of the review. Moreover, this section examines the way to deal with be utilized in directing the review and furthermore introduced how information will be gathered from the case firms and different respondents. The section closes with the steps used to dissect the information gathered.



## CHAPTER FIVE

### DATA ANALYSIS AND DISCUSSION

#### 5.0 Introduction

The subdivision comprises two key segments. The first segment captures a presentation of the data collected from respondents while the second segment discourses the findings of the study with prevailing works. The retorts from various participants are branded and discussed in order to answer the exploration objectives highlighted in chapter one above.

#### 5.1 Analysis of Data

In this section of the study, the data is analysed in accordance with the research objectives iterated.

##### 5.1.1 Profile of Study Participants

The profile of respondents who participated in the study constituted of demographic variables, designation in the firm, duration of years in the firm and also indicates the firm within which they work or operate.

**Table 5.1: Profile of Respondents**

RESPONDENT	CODE	POSITION IN ORGANISATION	NUMBER OF YEARS IN THE FIRM
A	KA	CEO	SIX YEARS
B	KB	FOUNDER/CEO	FOUR YEARS
C	KC	FOUNDER	FIVE YEARS
D	KD	DEPUTY DIRECTOR	THREE YEARS
E	KE	HEAD, BUSINESS DEVELOPMENT	FIVE YEARS
F	KF	PUBLIC RELATIONS OFFICER	THREE YEARS
G	KG	HEAD, R&D	ONE YEAR
H	KH	MANAGER	TWO YEARS
I	KI	MANAGING DIRECTOR	ONE YEAR
J	KJ	DIRECTOR	THREE YEARS

Source: Field Data, 2021

The respondents available for this study were all high-level management staff in their individual firms, most of which were the founders or co-founders of the organisation. They had considerable amount of knowledge and skills regarding the operations of tech hubs and a better understanding of the research purpose. Additionally, most of the respondents had worked with the organisation for more than a year. Also, the studies revealed that majority of the organisations were led by males.

### **Profile of Respondent Start-up Firms**

The profile of the tech-based start-up firms are briefly presented below;

#### **Trokxi (KG)**

Trokxi is a tech-based start-up firm which focuses its operation on a mobile and web-based application. The application software provides its users with estimated public transport fares to their various client's destinations around the world. This helps commuters to properly budget for their trips and in so doing, saves cost/ money and time. The application which is built on the global google map app also maps out major cities and their respective transport systems. Currently, this application predominantly within Ghana but hopes to launch it soon on a global scale.

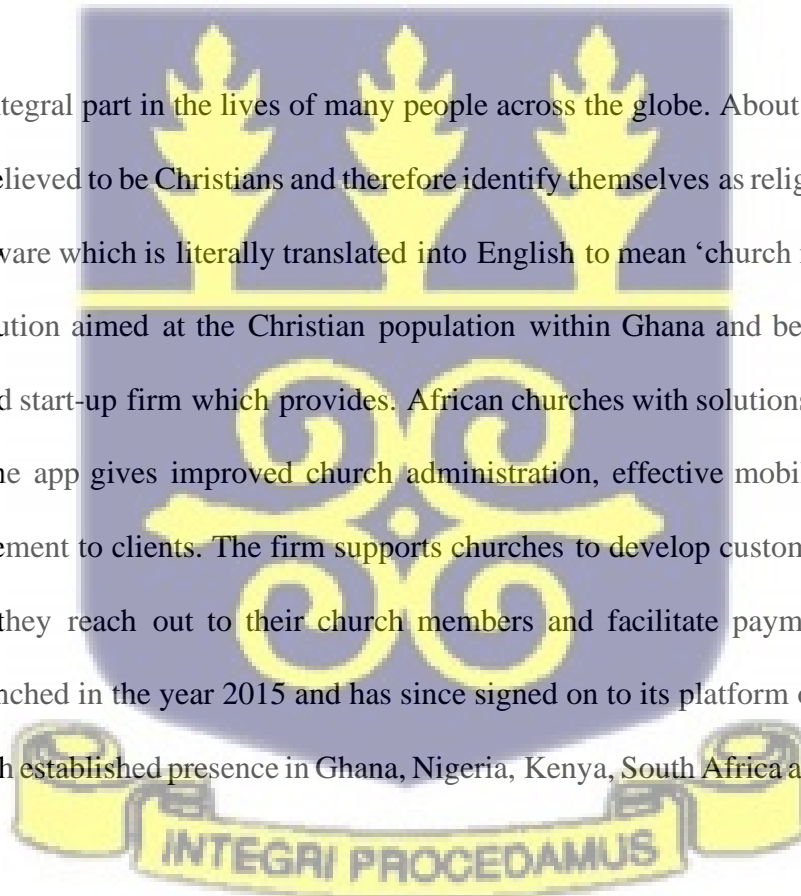
#### **Retail Tower (KJ)**

This is an e-commerce marketing-based software application which allows online business owners to list their online shops with ease across all the major comparison-shopping web engines. This application or software accelerates the exposure of the merchants online and thereby drive

massive traffic and also improves sales. Data feeds from over 15 independent online and shops are submitted to web engines in the likes google, Amazon, Shopville and PriceGrabber for easy comparison by clients. Through Retail Tower's analytics platform, rereferral traffic can be tracked by online merchants or business owners. The firm's platform currently hosts more than eleven thousand (11,000) businesses and has integrated them with the major leading platforms in e-commerce like Amazon and currently considered as Amazon Ads well acclaimed solutions provider.

### **Asoriba (KI)**

Religion is an integral part in the lives of many people across the globe. About 2.3 billion people worldwide are believed to be Christians and therefore identify themselves as religious. The Asoriba platform or software which is literally translated into English to mean 'church member' provides cutting edge solution aimed at the Christian population within Ghana and beyond Asoriba is a technology-based start-up firm which provides African churches with solutions to their data base management. The app gives improved church administration, effective mobile communication and data management to clients. The firm supports churches to develop customized mobile apps through which they reach out to their church members and facilitate payments and receipts. Asoriba was launched in the year 2015 and has since signed on to its platform over one thousand churches and with established presence in Ghana, Nigeria, Kenya, South Africa and still expanding.



### **ZeePay (KF)**

ZeePay is a Ghanaian Fintech start-up firm which is managed by a former banker Andrew Takyi-Appiah. It seems to be one of the start-ups making positive waves in the country and beyond. They were able to raise \$940,000 from British investors in December 2020 last year and they are indeed the fintech start-up firm to pay close attention to now in Ghana. The firm molds digital bars to connect digital resources such as mobile money wallets, Banks accounts, ATMs, plastic cards and other digital marks to payments, subscriptions, and international money transfer operators globally. They are currently operating in South Africa and Rwanda as well.

### **meQasa (KE)**

meQasa is a start-up firm founded in 2013 in Ghana. The name meQasa is literally translated into English to connote 'I talk' is a start-up firm that is working effectively towards giving prospective tenants an efficient housing search experience. They seek to be the spring of reliable information on accommodation and housing in the African continent. Through collaborative effort with brokers, owners and tenants, they are able to create complete and dynamic profiles for clients and advertise all the profiled properties adequately when vacant. meQasa creates an enabling environment which allows for easy flow of communication and appointments involving prospective tenants, property owners and agents. Currently meQasa is the leading real estate website in Ghana having over forty thousand (40,000) properties listed on its platform from more than two hundred and thirty (230) property developers and over 2,500 real estate agents. The firm's platform plays an important role in Ghana's real estate sector as it is positioned to offer property seekers with an array of options

and that of property sellers more potential clients than other platforms do. Whatever your housing needs are from private to commercial properties, meQasa has a solution for you in all major cities and towns in all the regions in Ghana.

### **Shopintins.com (KD)**

It is a start-up firm in the area of e-commerce founded in Ghana on the 1<sup>st</sup> of January 2017. The firm provides one of the fastest multi-faceted vendor online marketplace services which aids sellers to easily set up and manage their shops online. From its inception in 2017, the start-up firm has established as its core mandate to become one of the most reliable e-commerce sites in Ghana and in Africa providing a safe marketplace to transact the business of buying and selling. Vendors are also able to create their own online store that suits their peculiar business needs or allow the firm shopintins.com to manage their shops at a charged fee. Shopintins works to satisfy a retail clientele-base in Ghana that is rapidly evolving. The platform offers a variety of product ranging from books, beauty products, smartphones, real estate properties, furniture, computers and accessories, home appliances, healthcare, textiles, fashion and many more. They are highly customer-focused with a commitment to unearthing the best ways possible to improve the shopping experience of customers online.



### **Incas Diagnostics (KC)**

This is tech-based start-up firm founded by a microbiologist, Biomedical engineer and an entrepreneur who has a passion for developing medical test kits at point of care to improve global health. The firm has as its objective to design and produce easy-to-use, point of care diagnostic test

kits at a reasonably low-cost to save lives. Incas diagnostics is among the foremost Ghanaian start-ups to have successfully developed a pregnancy test kit and additionally led a collaborative team of scientist from the Kwame Nkrumah University of Technology (KNUST) to develop Ghana's first covid-19 test kit in 2020.

### **Appruve (KB)**

This is a start-up firm that has been able to successfully integrate technology and legal issues relating to details for compliance or best practices for companies that need some sort of verification. It is Ghana's leading know your Customer (KYC) product which provides easy integration to conduct quick verifications with ID cards, Face verification and Document verifications. The start-up firm came first place in the Hague Institute of Innovation of Law innovating Justice challenge West Africa regional finale in 2019. Again, in the Netherlands held Innovating Justice forum grand finale in 2020, it came second place. Appruve is currently positioning itself to become a pan-African brand and are now active in over nine countries in Africa hoping to extend into other countries soon.

### **TraveltoGhana (KH)**

This is a start-up firm operating in the Travel and Tourism sector founded in 2016. The app platform is provided by Viaxar Company limited. Their goal is to provide trust -worthy tours designed by experienced local guides, exquisite services provided by hotels and secure transfers

by the local car rental companies. The platforms provide customers access to properties, local tour guides, agencies, and other acquisition systems. The platform is focused on permitting travelers find their ideal hotels, car rentals, restaurants, flights and basically the interesting activities Ghana has to offer. Aside Ghana, the firm is also operating in some other African countries on twenty live international platforms in thirty different languages.

## **Presentation of findings**

### **5.1.2 Objective One: To explore the nature of tech-based entrepreneurial activities offered by the hubs**

The first research objective stated was to explore the nature of tech-based entrepreneurial activities offered by the tech hubs. In view of this the researcher sought to understand specifically how the tech hubs supported the startup firms in their various fields of operation. To be able to achieve this purpose, the major question considered by the researcher was, what is the nature of tech-based entrepreneurial activities offered by the hub? The following themes emerged for discussion; *“everybody can have an idea to start up a business but until it is translated into a marketable commodity or service it remains just a dream”*, *“possessing the right skills as an entrepreneur is the key foundation for a successful venture”*, *“raising funds to start-up businesses and also getting ready for investors are major issues for Ghanaian start-ups”*.

#### ***Idea generation and incubation***

From the analysis it was evident that quite a number of ideas are generated each day however many remain as dreams that are somewhat not fulfilled. This is largely because the individuals are unable to properly nurture the ideas and transform them into marketable commodities or

services to be offered for public attention. The hubs provide help along this line by guiding the start-up firms from the conception of the idea through an incubation process where the idea is reviewed on a regular basis and refined to make it market ready.

For instance, InnoHuB (AK) intimated that

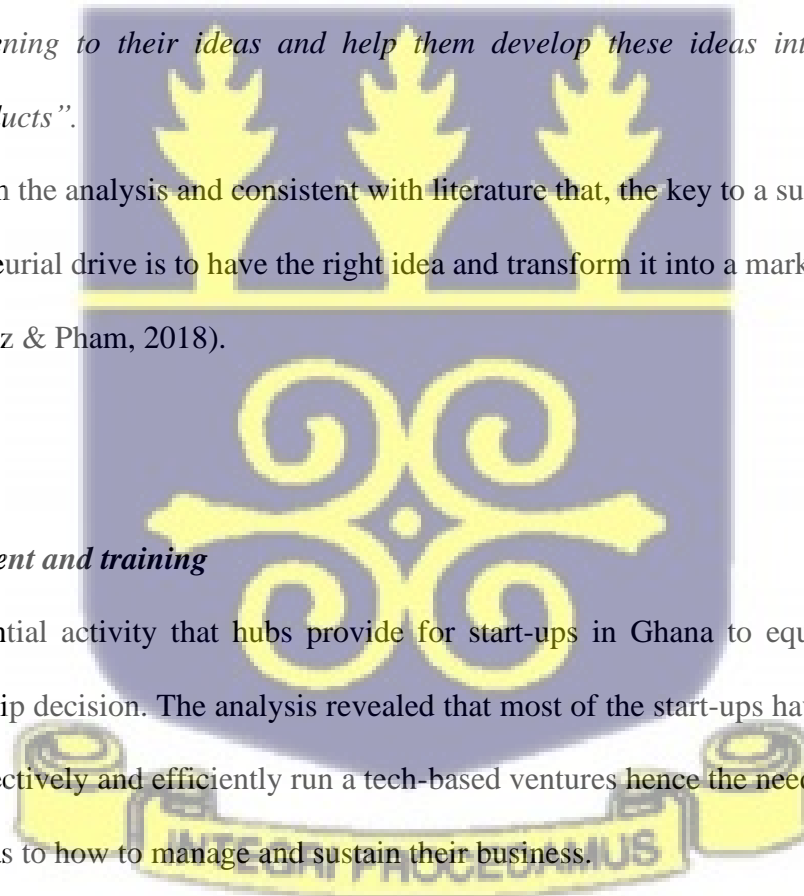
*“millions of business ideas are generated by individuals daily, both young and old. This means that everybody can have an idea to start up a business but until it is translated into a marketable commodity or service it remains just a dream. One’s ability to transform these ideas in products or services is what makes the difference between an entrepreneur and a dreamer. In our quest to develop as many entrepreneurs within the tech-based sector, we guide our clients through this process by listening to their ideas and help them develop these ideas into innovative and marketable products”.*

It is evident from the analysis and consistent with literature that, the key to a successful tech-based entrepreneurial drive is to have the right idea and transform it into a marketable commodity (Ruiz & Pham, 2018).

### ***Skills development and training***

This is an essential activity that hubs provide for start-ups in Ghana to equip them for their technopreneurship decision. The analysis revealed that most of the start-ups have little or no idea as to how to effectively and efficiently run a tech-based ventures hence the need to undergo some sort of training as to how to manage and sustain their business.

AK noted that,



*“possessing the right skills as an entrepreneur is the key foundation for a successful venture. Often times start-ups take off nicely but fail within few months of operation and this is mainly accounted for due to their lack of the right skills in running a business. We help our clients by offering entrepreneurial training and coaching to equip them with the necessary skills like how to manage people, resource allocation, policy drafting and business modeling”.*

This clearly indicates that, when young entrepreneurs are properly trained and nurtured to sharpen their skills in the chosen area of operation, they stand a greater chance of survival than those who do not receive any form of tech-based entrepreneurial training and skills development. (Martínez, 2019). The skills set acquired enables them to be better managers of their resources which culminates into sustained profits (Hamida, 2020).

### ***Funding***

The raising of the initial capital or funding for the start-ups is one key activity the hubs undertake to help put clients on the right pedestal. From the data collected it was evident that getting funds as start-ups to establish businesses was a major challenge in Ghana because the financial institutions are reluctant in advancing loans to such budding enterprises. The tech hub provides this essential activity to tech-based entrepreneurs through direct initial capital investment or help the start-ups to be investor ready.

AK noted that,

*“most of the tech-based start-up firms are unable to access funds to see their dreams actualized because the financial institutions do not sometimes believe in their business plan. Also, their documents for accessing funds are poorly prepared and investors would like to invest in smart viable firms. As a hub we have helped businesses raise over \$6.6M, invested about\$1.5M in*

*start-ups because we believed in them and given about \$1.4M as disbursed grants to support our start-ups. We also guide them in the preparation of their documents to make them investor ready”.*

Additionally, a respondent iterated,

*“Innohub has been impacting our diagnostic firm massively from its inception. When others doubted in our capabilities, they believed in us and helped us put together all the relevant documents to make us investor ready. Their amazing team helped us through growth hack to secure our first funding which we used to develop our first pregnancy test kits”.*

Deducing from the above statements, it is evident that tech hubs help in funding their start-ups through initial capital support and also prepare them to be investor ready. Attracting investors comes with the right business plan and the proper preparation of documents (Sutton, 2013).

### **5.1.3 Objective Two: To explore the benefits obtained from the hubs by the tech-based start-ups**

The second objective of the study aimed at exploring the benefits obtained from the hubs by the tech-based start-ups. The responses from the respondents were garnered by asking them what are the benefits they have obtained from the hub. The interviews revealed that most of the benefits obtained buttressed the objective one which sought to explore the nature of tech-based entrepreneurial activities like; idea generation and incubation, skills development and training, funding and investor readiness. Adding to these benefits, the respondents threw more light on some other benefits they obtained by reason of their association with the hub. The following issues emerged from the analysis for discussion below;

### ***Networking***

Working together as tech-based start-ups under the same hub created a common platform that enabled them to interact with one another in exchange of information and creative ideas which impacts them professionally and socially. It was evident that sharing of working space sometimes helped the new start-ups to learn from the more experienced ones who acted as supervisors indirectly to ensure that their operations were within the right scope of tech-based firm.

Respondent KH noted that,

*“When we first started operating as a tech-based start-up we had no working space of our own but had to use the workspace provided by the hub till we decided to move out. I must say working together with the others within the same space was amazing because getting help from others was so easy”.*

Additionally, JH also iterated,

*“Belonging to the same platform creates one big family where we support each other in diverse ways. We have become a network of individuals who think alike”.*

Evidently, the creation of this network within the tech hub ecosystem is key to their survival as technopreneurs. Resources can be shared easily amongst them whenever there was the need to do so without struggle.

### ***Access to Investors***

Deducing from the data analysis, it was established that hubs used their extensive linkages with other organisations local and international to create an easy access to investors for their clients or



start-ups. The study found that tech-based firms who signed up with tech hubs had a greater access to investors than those who do not.

Respondent CK intimated that,

*“When the idea to form this company was conceived, we tried to make it a reality on our own but struggled to get funds to start. A friend then recommended we associated with a tech hub, I must confess I was a bit reluctant at first but upon joining, I have not regretted at all. After helping us to reshape our business idea and writing a comprehensive business plan, we got the opportunity to meet some investors who had partnership with the hub”.*

### ***Infrastructural Support***

Start-ups who are on hub platforms obtain the foundation or framework that supports their operations as tech-based firms. This spans from physical and virtual resources which are essential for their business activities like shared office spaces, ICT support systems (internet and networking, data management, storage, processing and analysis). It was observed that most of the tech-based start-ups did not have conducive workspaces to properly store the equipment. Also, the cost involved in acquiring the office spaces and equipment were quite high for the new start-ups to be able to afford. The hubs provide this infrastructural support to help the start-ups establish themselves to an appreciable leverage before they move out to their own spaces.

A respondent intimated that,

*“At the time we started our firm, finances were not that good so we had difficulty in renting an office space and also procuring some of the essential ICT infrastructure we needed to operate efficiently. So, the hub accommodated us at an affordable rate till we found our footing to move out”.*

Adding to this respondent HK iterated,

*“The support we receive by way infrastructure greatly cuts down our operational cost by forty percent”.*

Evidently these benefits obtained from tech hubs by the tech-based start-ups gives them some room to concentrate on other aspects of the business and channel their resources efficiently and effectively to promote growth.

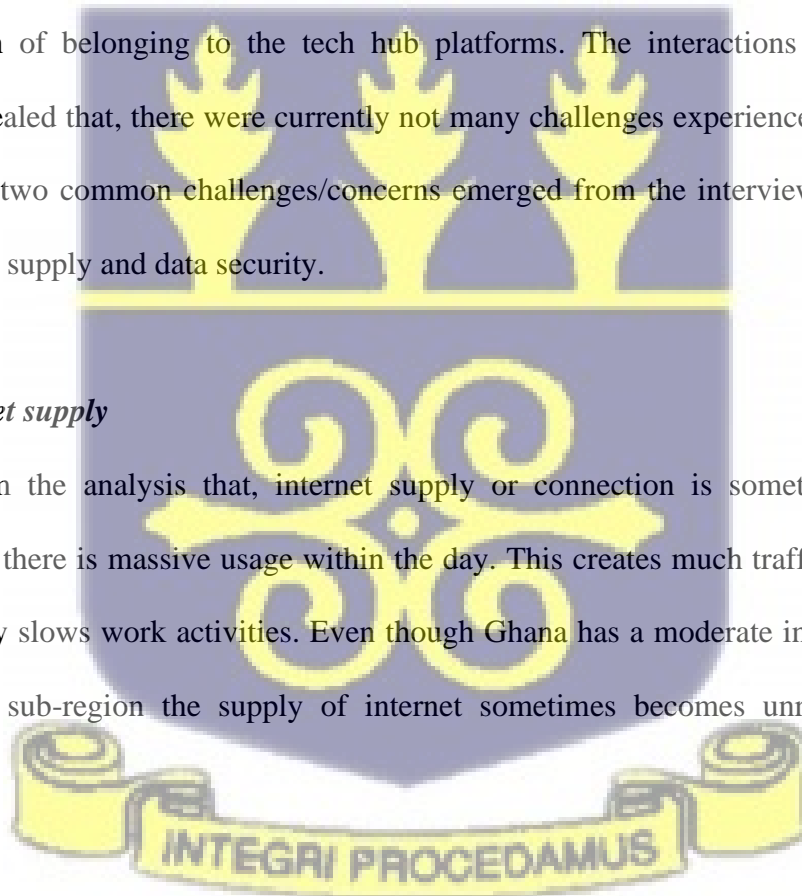
### **5.2 Objective Three: To explore the challenges experienced under the hubs as start-ups**

The third objective of the study focused on exploring the challenges tech-based start-ups firms faced by reason of belonging to the tech hub platforms. The interactions with the various respondents revealed that, there were currently not many challenges experienced under the hubs. However, these two common challenges/concerns emerged from the interviews for discussion- unstable internet supply and data security.

#### ***Unstable internet supply***

It emerged from the analysis that, internet supply or connection is sometimes a challenge especially when there is massive usage within the day. This creates much traffic on the network which eventually slows work activities. Even though Ghana has a moderate internet penetration rate within the sub-region the supply of internet sometimes becomes unreliable for doing business.

JK noted that,



*“Regarding challenges, I cannot say much, my only concern is the stability of the internet supply. Due the sharing of common IT infrastructure sometimes, it is tough when we have a full house engaged on the network. The massive traffic interrupts the internet supply”.*

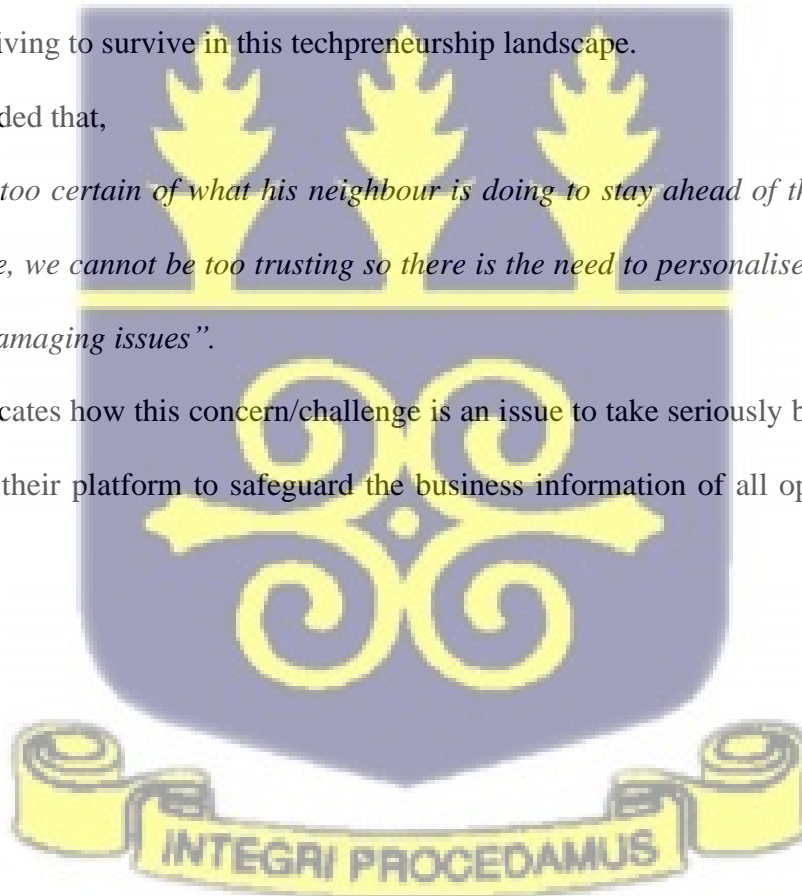
### ***Data security***

This concern which has to do with the protection of digital information from unauthorised access, corruption or theft was another concern that emerged. Sharing of common infrastructure meant easy access to data from other start-ups. Despite belonging to the same hub platform, the issue of security is paramount owing to the fact that they are individual entities under one big umbrella and striving to survive in this techpreneurship landscape.

A respondent added that,

*“one cannot be too certain of what his neighbour is doing to stay ahead of the competition, as human as we are, we cannot be too trusting so there is the need to personalise our data security to prevent any damaging issues”.*

This clearly indicates how this concern/challenge is an issue to take seriously by the hubs and all the start-ups on their platform to safeguard the business information of all operating under the tech hub.



## DISCUSSION OF RESULTS

It was established from the results that ideas are generated each day however many remain as dreams that are somewhat not fulfilled. This is largely because the individuals are unable to properly nurture the ideas and transform them into marketable commodities or services to be offered for public attention. This supports the work of (Westland, 2016) that ideas that are generated daily do not all end up as finished products or services on the market because they do not receive the proper nurturing of those wonderful ideas. It was found that the hubs provide help by guiding the start-up firms from the conception of the idea through an incubation process where the idea is reviewed on a regular basis and refined to make it market ready. It is evident from the analysis and consistent with literature that, the key to a successful tech-based entrepreneurial drive is to have the right idea and transform it into a marketable commodity (Ruiz & Pham, 2018).

### *Skills development and training*

IT was found that most of the start-ups have little or no idea as to how to effectively and efficiently run a tech-based ventures hence the need to undergo some sort of training as to how to manage and sustain their business. Receiving the right training and skill development is key to the success of any business venture and congruent with the studies of (Chatterjee & Das, 2016; Dodds, Ali & Galaski, 2018; and Griffith., Baur & Buckley, 2019) that training and skills development are a pre-requisite for start-ups to succeed in the technopreneurial ecosystem.

The results indicated that, when young entrepreneurs are properly trained and nurtured to sharpen their skills in the chosen area of operation, they stand a greater chance of survival than those who do not receive any form of tech-based entrepreneurial training and skills development

(Martínez, 2019). This is in line with the assumptions of the DOI which seeks to explain “how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system” (Rodgers, 1962). The skills set acquired enables them to be better managers of their resources which culminates into sustained profits (Hamida, 2020).

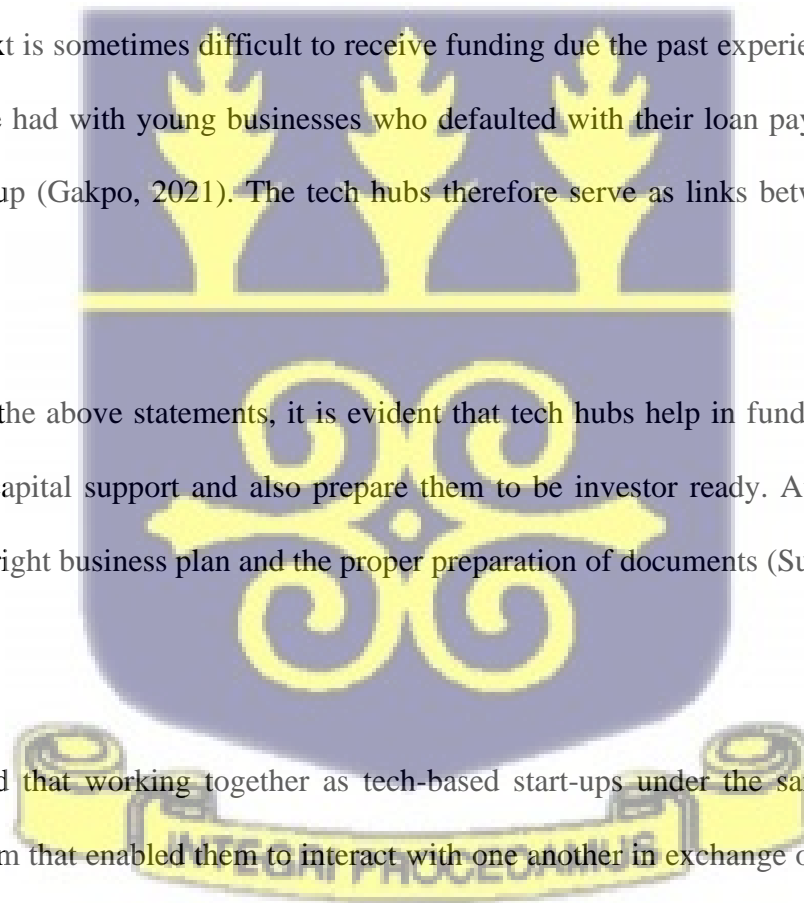
### ***Funding***

It was established that getting funds as start-ups to establish businesses was a major challenge in Ghana because the financial institutions are reluctant in advancing loans to such budding enterprises. The tech hub provides this essential activity to tech-based entrepreneurs through direct initial capital investment or help the start-ups to be investor ready. Doing business in the Ghanaian context is sometimes difficult to receive funding due the past experiences the financial institutions have had with young businesses who defaulted with their loan payments when they fell due to pay up (Gakpo, 2021). The tech hubs therefore serve as links between the start-ups and investors.

Deducing from the above statements, it is evident that tech hubs help in funding their start-ups through initial capital support and also prepare them to be investor ready. Attracting investors comes with the right business plan and the proper preparation of documents (Sutton, 2013).

### ***Networking***

The study found that working together as tech-based start-ups under the same hub created a common platform that enabled them to interact with one another in exchange of information and creative ideas which impacts them professionally and socially. Since hubs are work spaces where creative and like-minded individuals converge, there is always the possibility of interacting with



others to share creative ideas and eventually establishing long lasting mutually beneficial relationships to survive within this entrepreneurial landscape (Fuji,2016; Thompson & Purdy, 2018; Mitev et al, 2019). It was evident that sharing of working space sometimes helped the new start-ups to learn from the more experienced ones who acted as supervisors indirectly to ensure that their operations were within the right scope of tech-based firm. Evidently, the creation of networks within the tech hub ecosystem was found to be the key to the survival of technopreneurs.

### ***Access to Investors***

The results established that hubs used their extensive linkages with other organizations local and international to create an easy access to investors for their clients or start-ups. Investors generally seek viable places to invest their monies and start-ups firms are not the likely viable spot to invest money. However, through the help of the hubs stemming from their connections with other platforms create a link between their start-ups and possible investors who get the opportunity to review the ideas and documentations of the start-ups (Gao et al., 2021; Audretsch et al., 2020; Arena et al., 2018 and Battistella et al., 2018) all confirms the above discussion. The study therefore confirms that tech-based firms who signed up with tech hubs had a greater access to investors than those who do not.

### ***Infrastructural Support***

It was found that start-ups who are on hub platforms obtain the foundation or framework that supports their operations as tech-based firms. This spans from physical and virtual resources which are essential for their business activities like shared office spaces, ICT support systems

(internet and networking, data management, storage, processing and analysis). Also, it was noticed that most of the tech-based start-ups did not have conducive workspaces to properly store the equipment (Joshi & Achuthan, 2018)

Additionally, the study found that the cost involved in acquiring the office spaces and equipment were quite high for the new start-ups to be able to afford. The hubs provide this infrastructural support to help the start-ups establish themselves to an appreciable leverage before they move out to their own spaces (King et al.,2020; Cibin, 2018).

### ***Unstable internet supply***

The rise in the usage of smartphones and other internet compatible devices by the Ghanaian populace has undoubtedly resulted in a surge in internet data demand from customers. The providers of internet data somehow seem to be unable to adequately match the demand with supply, creating a dip in the supply of internet in Ghana which leads to intermittent breaks in the smooth flow of internet. In certain parts of the country internet access is arguably impossible making it extremely difficult for those who depend on stability of internet supply to perform their duties as and needed. This challenge makes it difficult for people in those internet-deprived or highly unstable regions to fully harness their potentials within the technopreneurial space.

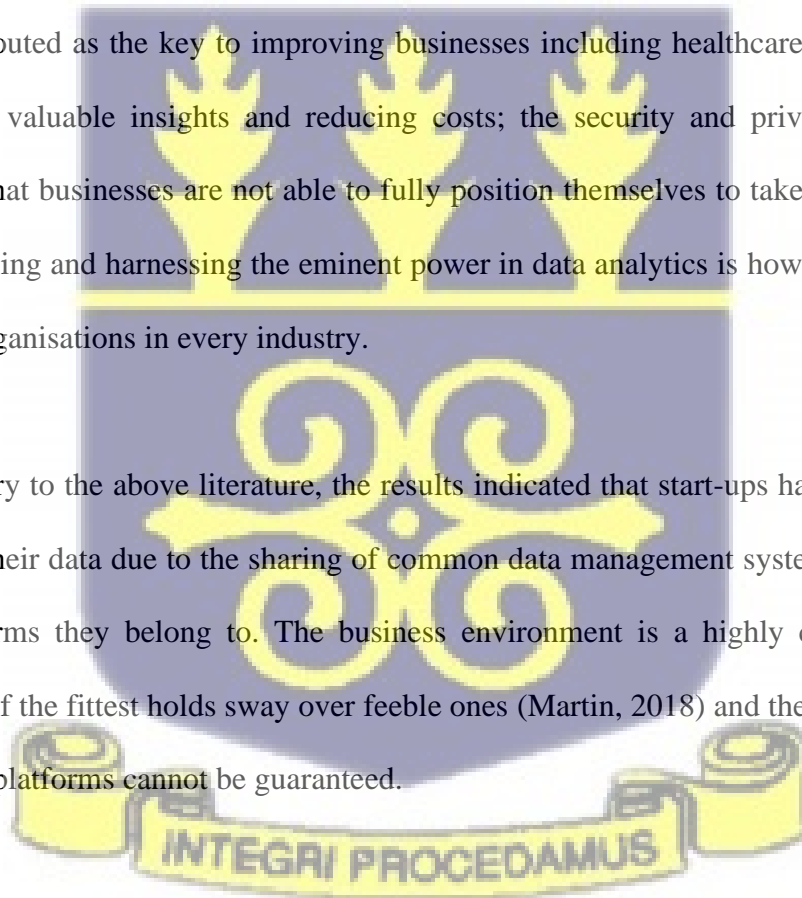
It emerged from the analysis that, internet supply or connection is sometimes a challenge even in the urban areas especially when there is massive usage within the day. This creates much traffic on the network which eventually slows work activities. This is congruent with literature from Hakiri et al., (2014) that there is the need to extend the internet for the purpose of improving intra-domain and inter-domain routing for high availability of the network. This will provide an

end-to-end connectivity for users making room for dynamic quality of service (QoS) management of network resources for new applications such as data centres, cloud computing and network virtualization.

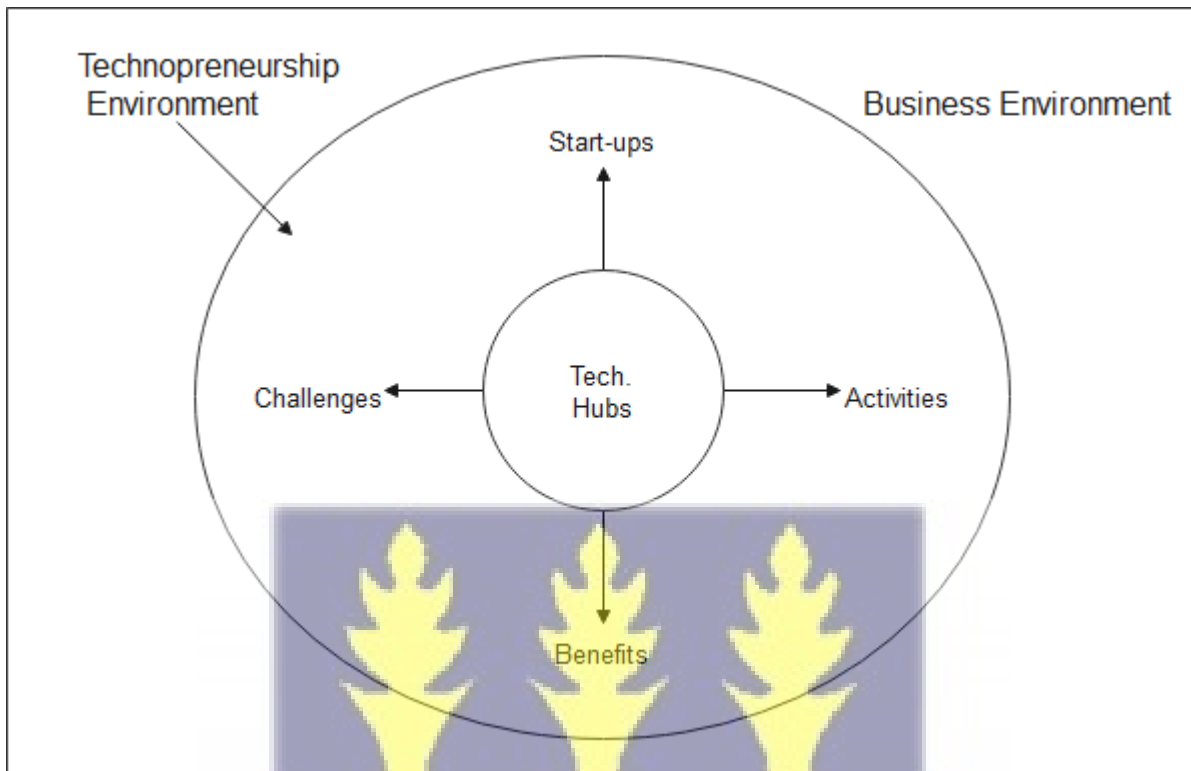
### *Data security*

It was revealed that the issue of security is paramount owing to the fact that they are individual entities under one big umbrella and striving to survive in this techpreneurship landscape. Data is arguably the most valuable asset that any serious-minded entrepreneur should guard zealously in recent times. The success of businesses today is greatly dependent on how effectively and efficiently data could be analytically harnessed. According to Abouelmehdi et al., (2017) even though data is touted as the key to improving businesses including healthcare organisations, by way of gaining valuable insights and reducing costs; the security and privacy issues are so overwhelming that businesses are not able to fully position themselves to take advantage of this resource. Managing and harnessing the eminent power in data analytics is however crucial to the success of all organisations in every industry.

However contrary to the above literature, the results indicated that start-ups had challenges with the security of their data due to the sharing of common data management systems offered by the tech hub platforms they belong to. The business environment is a highly competitive space where survival of the fittest holds sway over feeble ones (Martin, 2018) and the safety of the data on these shared platforms cannot be guaranteed.



### TECHNOPRENEURSHIP MODEL



Within the technopreneurship space/environment, technology hubs in Ghana provide a number of technopreneurial activities such as infrastructural support, idea generation and incubation, funding of start-up ventures, skills development and training and other beneficial activities to start-up firms who operate on the platforms of these hubs. The benefits derived from the technopreneurial activities offered by the hubs to these start-ups results in the creation of technopreneurs. These technopreneurs are able to overcome the challenges that persist within the competitive business environment such as data security, unstable internet supply and other economic conditions that affect general business operations, to successfully create businesses that have their foundations on technology.

## CHAPTER SIX

### SUMMARY, CONCLUSIONS AND RECOMMENDATION

#### 6.0 Introduction

The previous chapter outlined the findings that emerged from the various interactions held and a discourse on those results as well. This current chapter focuses on providing a summary of the study, the main outcomes of the study, conclusions and the relevance of the study. Based on the conclusions obtained from the research findings presented, recommendations were outlined for industry players, policymakers and other stakeholders. Again, the limitations and proposed future guidelines for further studies on this research topic are enumerated.

#### 6.1 Study Summary

Many explorations have analyzed a few Tech hub topics, like the effect of globalization, harmony and soundness of invention (Amavilah et al., 2017), the information economy execution and direction of African nations (Asongu et al., 2020; Asongu 2017a; Vadra 2017), and the strategy conditions and techniques for building information-based economies (Obamba, 2013; Asongu, 2017b; Asongu and Odhiambo 2019;). Scholarly academic discourse has additionally seen exploration in this field according to the viewpoint of the contributions made by colleges as the significant wellspring of information and its capacity to stay valuable to society and industry. This latest entity represents an incredible test for colleges to realign themselves by changing from being information manufacturing plants to limit crossing pivot points associating the scholarly world to nearby organizations local gatherings and the business in inspiring innovation and financial improvement in a substantially more unique and hearty way

(Youtie and Shapira, 2008; Wright, Mosey and Clarysse,2012). In view of this, the study seeks to explore the nature of tech-based entrepreneurial activities offered by tech hubs, the benefits obtained by the start-ups and the challenges experienced under the hubs by the start-ups within the Ghanaian context.

Preceding the findings of the study, an exploration of the main topical themes pertaining to the concept of techpreneurship were considered. These included African tech hub techniques, tech hub entrepreneurial ecosystem, entrepreneurship and innovation, hubs and innovative environment, some Institutional and environmental factors affecting innovation in the entrepreneurial ecosystem and the invisibility of people in innovation. Additionally, the diffusion of innovation theory was mention in the discussions along with the evolution of tech hubs in Africa and Ghana. The company profile of the main hub used for the study, Innohub was presented. The study adopted a qualitative research approach crafted as a case study and an interview guide used as the main tool for collecting data from ten key respondent firms. The interactions during the interviews were recorded electronically and the data transcribed on thematic basis to allow for easy analysis. The discussion of findings was done supported by literature and in line with the stated research objectives.

## 6.2 Summary of Findings

### 6.2.1 Objective One: To explore the nature of tech-based entrepreneurial activities offered by the hubs

The first objective stated was to explore the nature of tech-based entrepreneurial activities tech hubs undertake to help start-ups in Ghana. The results emerging from the study confirms that the key ingredient in the formation of tech-based start-ups in Ghana is to a marketable idea which

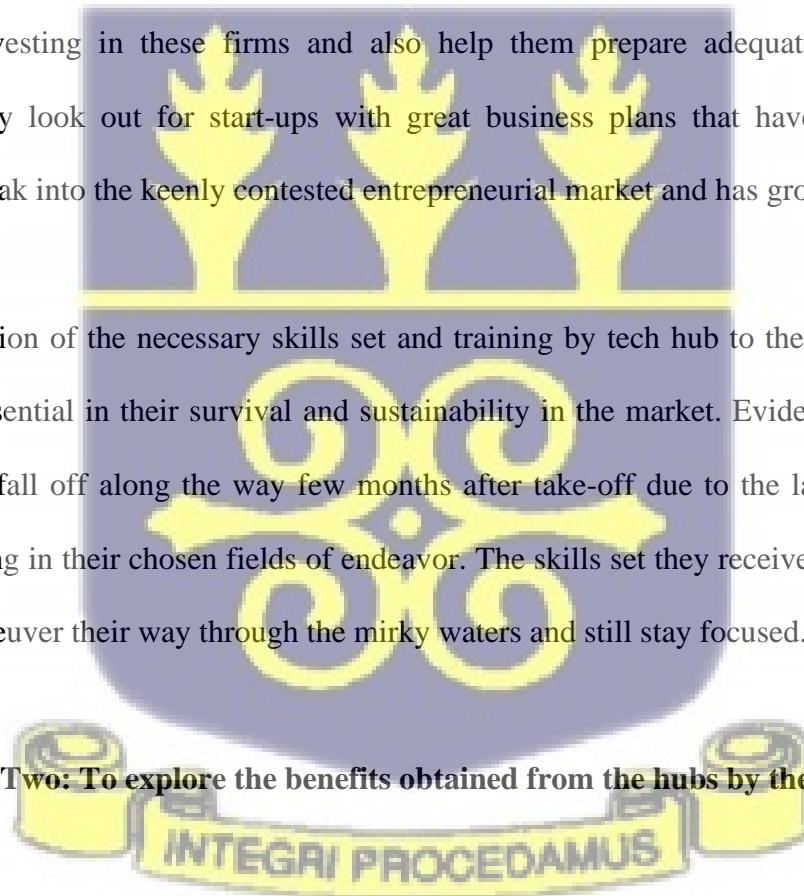
can be transformed into an innovative product that consumers will gladly opt for. Tech hubs in Ghana create an enabling environment for young technopreneurs to nurture their ideas till they are market ready. Start-ups strive on this entrepreneurial activity to review their business ideas and plans to stay competitive and relevant in the technopreneurial ecosystem in Ghana and beyond.

Another key activity which hubs in Ghana undertake for their start-ups is funding which is an integral component in business formation. One difficult task for Ghanaian start-ups is the ability to raise capital from financial institutions. Tech hubs therefore provides such a great relief to start-ups by investing in these firms and also help them prepare adequately for investors. Investors usually look out for start-ups with great business plans that have the potential to innovatively break into the keenly contested entrepreneurial market and has growth potential.

Also, the provision of the necessary skills set and training by tech hub to their clients/start-ups proved to be essential in their survival and sustainability in the market. Evidently, many young technopreneurs fall off along the way few months after take-off due to the lack of managerial skills and training in their chosen fields of endeavor. The skills set they receive enables the start-up firms to maneuver their way through the mirky waters and still stay focused.

### **6.2.2 Objective Two: To explore the benefits obtained from the hubs by the tech-based start-ups**

The second objective of the study focused on exploring the benefits tech-based start-ups obtained from the tech hubs. The study results give an indication that, the tech-based entrepreneurial



activities that were undertaken by the tech hubs in Ghana like; idea generation and incubation, skills development and training, funding and investor readiness all culminate into benefits to the start-ups. However, these additional benefits also emerged from the interactions- networking, access to investors and infrastructural support.

Networking in any field is important for survival in an environment where resources are not evenly distributed. Tech-based start-ups that are signed onto the tech hub platform are able to create a healthy network of like thinking individuals who greatly impact the activities of one another within the hub-ecosystem. This also establishes a cordial relationship amongst all the participants on the platform which makes exchange of ideas and resource sharing much easier.

Start-ups who are operating under tech hubs are better placed in getting access to investors. The investors are usually linked to the hubs as partners or donors who are willing to invest in promising young technopreneurs. The study discovered that start-ups who are associated hubs easily get recognized by investors through their tech hubs.

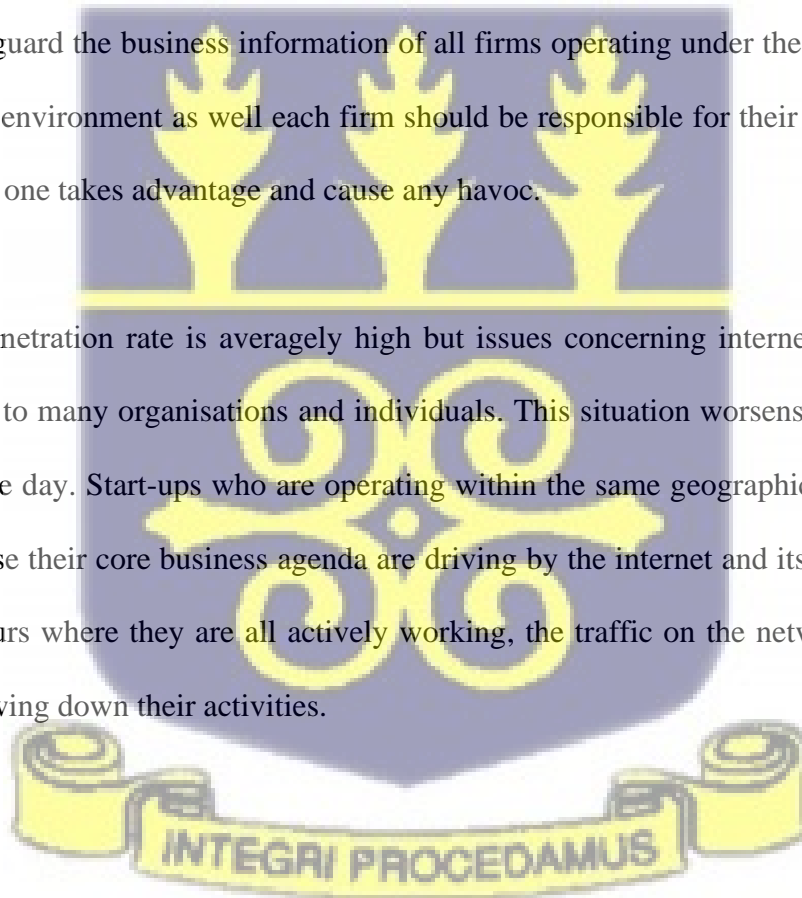
The infrastructural support received by the start-up firms revealed that the operational cost of firms. Some tech-based firms get the opportunity to rent at reduced cost, some use the spaces for free till they are able to stand firm on their own. Also, this intervention evidently relieves the young technopreneurs from the pressure of acquiring ICT equipment that cost lots of money. Data management system belonging to the hubs are used by the start-up firms who do not have their own. Again, the hubs help them in procuring some of the needed equipment and they pay later.

### **6.2.3 Objective Three: To explore the challenges experienced under the hubs as start-ups**

The final objective for this research aimed at exploring the challenges experienced by the start-ups who are signed onto the tech hub platforms. Notably amongst the challenges are the issues of data security and unstable internet supply.

The study revealed that securing one's data was not a hundred percent surety since some of these resources are shared by all who belong to the platform. The study revealed that this concern/challenge is an issue to be taken seriously by the hubs and all the start-ups on their platform to safeguard the business information of all firms operating under the tech hub. Since it is a competitive environment as well each firm should be responsible for their own data security issues so that no one takes advantage and cause any havoc.

Ghana's data penetration rate is averagely high but issues concerning internet supply is also a major challenge to many organisations and individuals. This situation worsens especially during peak hours of the day. Start-ups who are operating within the same geographical space face this challenge because their core business agenda are driving by the internet and its related activities. During peak hours where they are all actively working, the traffic on the network becomes too much hence slowing down their activities.



### 6.3 Conclusions

The following conclusions were drawn based on the research findings

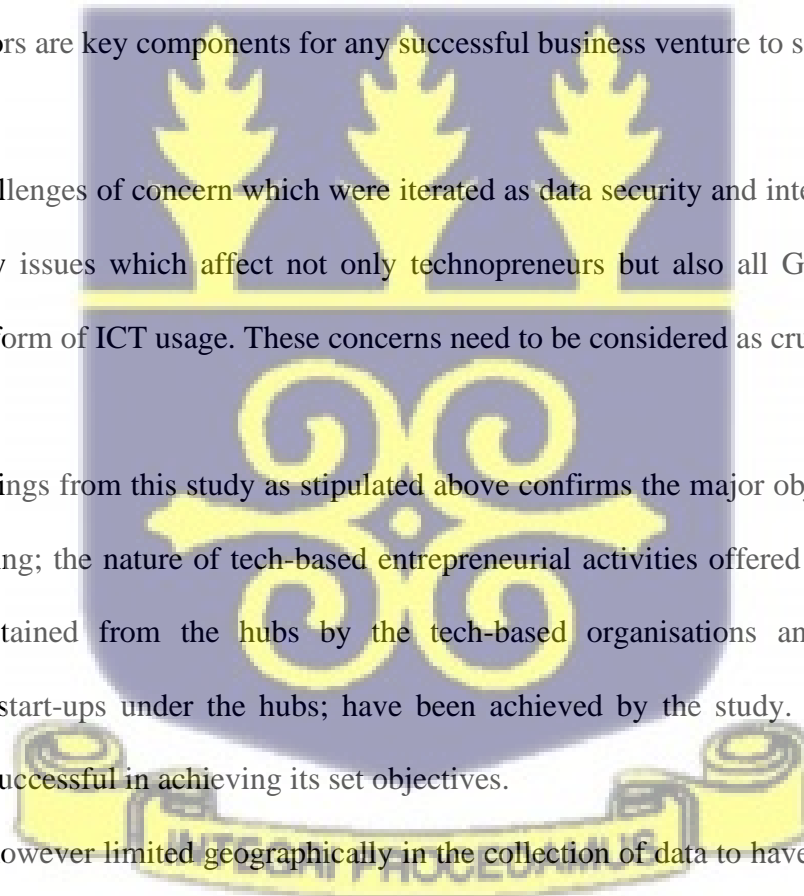
The tech-based entrepreneurial activities undertaken by tech hubs within the Ghanaian context shows the massive contribution they are making in the creation of more technopreneurs who are skilfully developed and trained to survive within this turbulent entrepreneurial ecosystem.

The benefits obtained by the start-up firms from the tech hubs in Ghana propels them to take off effectively due to the linkages that are established. The networking, infrastructural support and access to investors are key components for any successful business venture to start.

Some of the challenges of concern which were iterated as data security and internet supply being unstable are key issues which affect not only technopreneurs but also all Ghanaians who are engaged in any form of ICT usage. These concerns need to be considered as crucial.

The critical findings from this study as stipulated above confirms the major objectives this study aimed at exploring; the nature of tech-based entrepreneurial activities offered by the tech hubs; the benefits obtained from the hubs by the tech-based organisations and the challenges experienced as start-ups under the hubs; have been achieved by the study. In conclusion the study has been successful in achieving its set objectives.

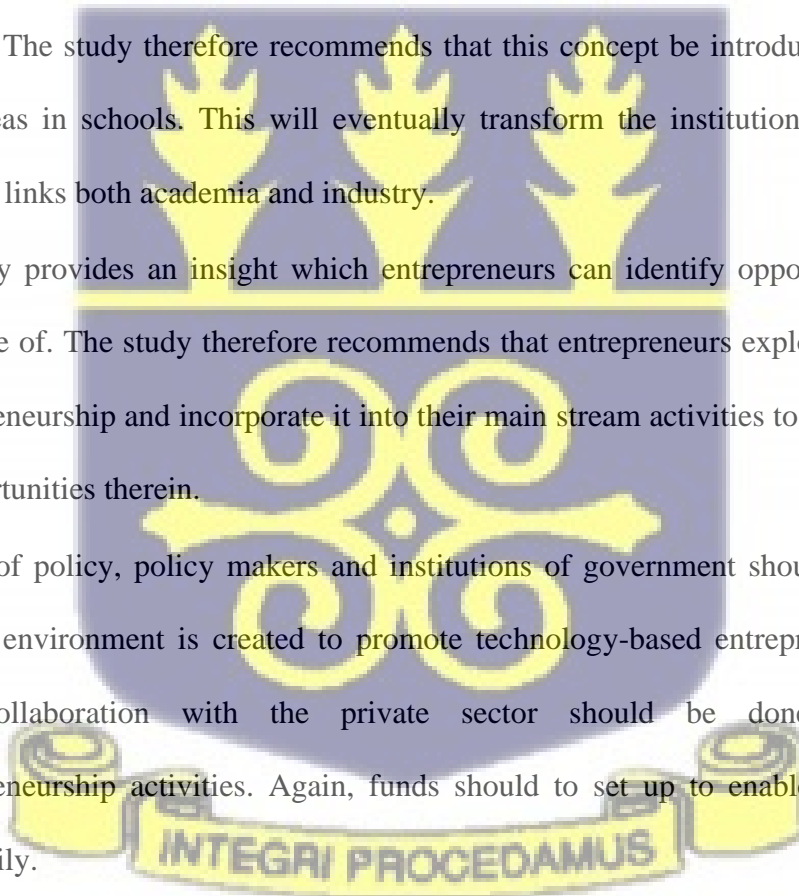
The study was however limited geographically in the collection of data to have a comprehensive analysis that spans across different geographic locations.



#### 6.4 Recommendations

Relying on the findings and conclusions of the study stipulated above, the study proposes these few recommendations for consideration by academic institutions, practitioners and policy makers.

- Evidently the conversation surrounding the concept of technology driven entrepreneurship here-in referred to as technopreneurship has taken a central position in the general concept of entrepreneurship management modeling in recent time. However not much of this concept forms part of the study curriculum in institutions of higher learning. The study therefore recommends that this concept be introduced as part of the study areas in schools. This will eventually transform the institutions into technology hubs that links both academia and industry.
- The study provides an insight which entrepreneurs can identify opportunities and take advantage of. The study therefore recommends that entrepreneurs explore the concept of technopreneurship and incorporate it into their main stream activities to take advantage of the opportunities therein.
- By way of policy, policy makers and institutions of government should ensure that an enabling environment is created to promote technology-based entrepreneurs in Ghana. More collaboration with the private sector should be done in promoting technopreneurship activities. Again, funds should to set up to enable start-ups access loans easily.



### **Study Limitations**

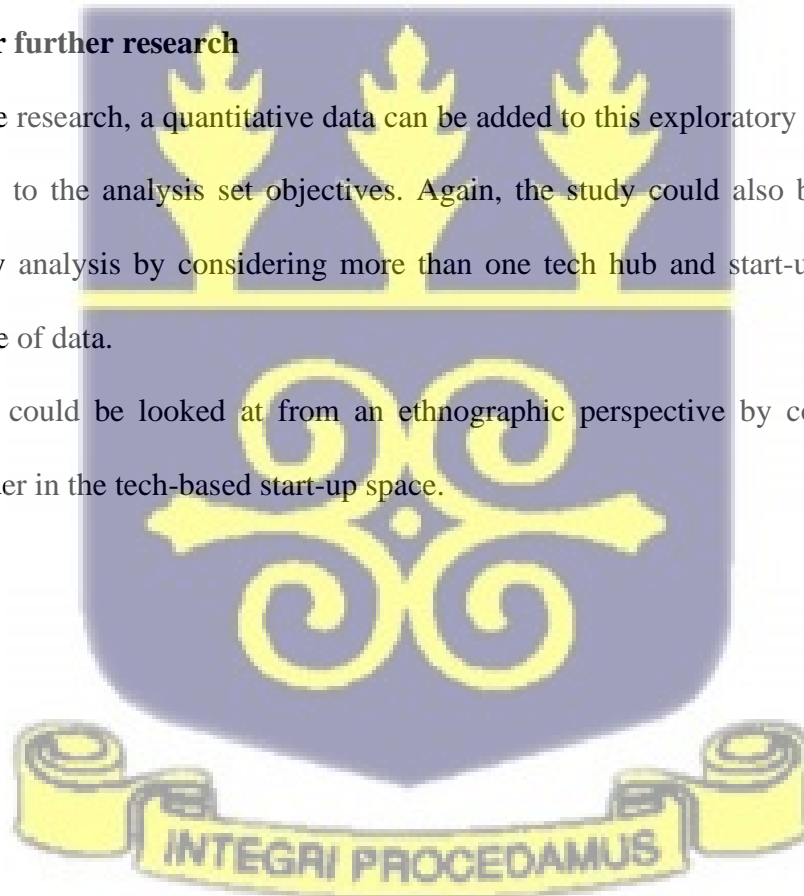
The study was limited by the following factors;

Financial constraints- financially the researcher was limited, making it difficult to cover the entire country to collect data. Again, time was of essence as the researcher had to work within a limited time frame to complete the study. Finally, the unwillingness of most of the respondents to divulge information necessary to aid this study was a major limitation.

### **6.5 Proposal for further research**

By way of future research, a quantitative data can be added to this exploratory study to provide a new perspective to the analysis set objectives. Again, the study could also be conducted as a multi case study analysis by considering more than one tech hub and start-ups under them to expand the scope of data.

Also, the study could be looked at from an ethnographic perspective by considering certain factors like gender in the tech-based start-up space.



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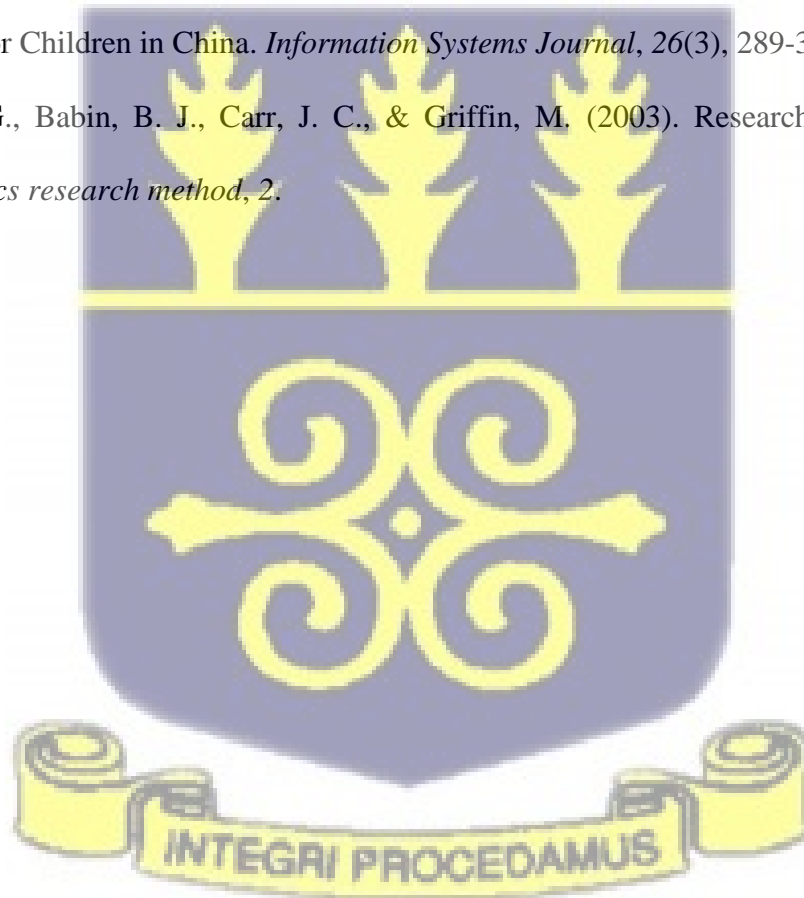
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**APPENDIX**

**APPENDIX: INTERVIEW GUIDE**

**UNIVERSITY OF GHANA BUSINESS SCHOOL**

**DEPARTMENT OF MARKETING AND ENTREPRENEURSHIP**

**INTERVIEW GUIDE – FOR TECH HUBS AND START-UP FIRMS**

**Introduction:**

My name is Oliver Edem Ashiaby, an MPhil student of the University of Ghana Business School pursuing Marketing. I am conducting a study on the Impact of Tech Hubs on Tech based Entrepreneurship in Ghana.

**Overview of the Research:**

Tech Hubs are physical spaces which could either be a city, suburb or just a collection of office suits developed to offer help to technological start-up companies to ensure their success. Hillemane (2020) opined that; a tech hub is a community which could either be informal or formal, that promotes innovation for primarily technology start-up companies. These tech hubs create an enabling environment which specifically target technology based budding entrepreneurs by helping them to find their footings through the massive encouragement of experimentation without chastising failure. This eventually leads to the creation of a network of individuals and organizations that think alike (Surana et al., 2020) and also get easy access to investors who fund their activities.

The purpose of this study is to explore the impact of tech hubs on tech-based entrepreneurship in Ghana with specific focus on the entrepreneurial promoting activities offered by these hubs, the benefits obtained by the tech-based firms and also the challenges faced under the hubs by these start-ups.

This research seeks to meet the following objectives;

4. To explore the entrepreneurial promoting activities offered by the hubs
5. To explore the benefits obtained from the hubs by the tech-based organizations
6. To explore the challenges experienced as startups under the hubs.

You are however not under any obligation to answer the questions to which you feel uncomfortable with. Thank you in advance for your invaluable contribution. Your participation is crucial to the success of this study. With regards to confidentiality, be rest assured that the information you shall provide is intended solely for academic purposes.

#### **A. NATURE OF THE TECH HUB**

Background of Respondent:

1. Please tell me about yourself and what you do? (In other words, what do you do, what position you hold and your highest educational level?)
2. How long have you been in operation?
3. Please tell me about some of the start-up firms on your platform?

#### **B. NATURE OF TECH-BASED ENTREPRENEURIAL ACTIVITIES:( HUBS ONLY)**

4. How does a firm qualify to be part of your platform?
5. Please tell me some of the entrepreneurial promoting activities you have put in place to help the start-ups?

**C. BENEFITS OBTAINED BY START-UPS UNDER THE HUBS:**

6. How long have you been operating as firm under the tech hub platform?
7. what are some of the benefits you have obtained as a start-up under the tech hub?

**D. CHALLENGES FACED BY START-UPS UNDER THE TECH HUBS:**

8. Do you have challenges?
9. Kindly tell me some of these challenges faced if yes?

Closing Remarks:

I am done with my questions; do you have any questions to ask me or anything you would like to add?

Do you have any general comments about your operation as a tech hub or start-up firm on the platform?

Are there any available documents (manuals, brochures, flyers) that can provide further information?

Can you please lead me to any other person if there is any that you know of who can furnish me with any further information?

Thank you for your time and participation. Your responses would be transcribed and sent to you for clarification if needed before the final write-up

