



ASHESI UNIVERSITY

Examining gender barriers of women entrepreneurs in tech; A case study of MEST
incubator.

Undergraduate Thesis

By

Edith Violet Naisubi

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Supervised by Dr Sena Agbodjah Agyepong & Dr Gordon Kwesi Adomdza

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DECLARATION

I hereby declare that this dissertation is my original work and that no part of it has been presented for another degree in this University or elsewhere.

Candidates signature: edith violet naisubi

Candidates name: Edith Violet Naisubi

Date: 11th May 2020

I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of theses established by Ashesi University.

Supervisor's signature:

Supervisor's name: Dr Gordon Kwesi Adomdza

Date:

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ABSTRACT

This paper aimed at examining the gender barriers of women entrepreneurs in the technological sector in Accra using a tech incubator as a case study. This study used the Meltwater Entrepreneurial School of Technology (MEST) incubator as a case study. This study was carried out for one year, and it was limited to MEST incubator because MEST has entrepreneurs from different parts of Africa. These entrepreneurs helped in bringing out different perceptions and opinions of entrepreneurs in the tech sector, coming from different developing economies.

The three objectives of this study included; documenting gender barriers affecting women entrepreneurs in tech incubators and what efforts incubators have made to eliminate these barriers. Secondly, identifying what defines success for an entrepreneur working in a business incubator globally to aid in establishing how gender influences their success. Thirdly, to recommend strategies that tech incubators and policymakers can adopt to improve the success rates of female entrepreneurs. These objectives were achieved by carrying out qualitative research using both primary and secondary data. The primary data was obtained through in-depth interviews with both female and male entrepreneurs at MEST incubator and one of the facilitators at this incubator. The secondary data was obtained from literature research.

Thematic analysis was used to analyse data from this study. Three main themes were developed; Assumptions and Expectations, Resources, and Mentorship. From the analysis, this study concluded that training, mentorship, and providing resources for entrepreneurship to women entrepreneurs help reduce the gender barriers in tech entrepreneurship. This study recommends setting up more incubators and providing mentorship to girls who show interest in tech at an early age.

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LIST OF ABBREVIATIONS

ICT - Information and Communication Technology

GMIC - Ghana Multimedia Incubator Centre

OECD- Organisation for Economic Cooperation and Development

SMEs - Small and Medium Enterprises

SET – Science Engineering and Technology

STEM- Science, Technology, Engineering and Mathematics

SDGs – Sustainable Development Goals

USD – United States Dollar

MEST - Meltwater Entrepreneurial School of Technology

EITs- Entrepreneurs in Training

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CHAPTER 1: INTRODUCTION

Topic

Examining gender barriers of women entrepreneurs in tech; A case study of MEST incubator.

Introduction

Entrepreneurship has become every country's economic engine as it has promoted economic growth, created jobs and reduced poverty (Smith & Chimucheka, 2014). Entrepreneurship is highly related to culture and also linked to gender in social practices (Bruni, Gherardi, & Poggio, 2004). In Africa, societies have made it hard for women to thrive in entrepreneurial activities, for example, some husbands expect their wives to stay at home as housewives (Olowu, Ijeoma, & Vanroose, 2017). Frederick & Dzisi (2008), argued that women in Ghana are expected to stay at home and do housework as part of the Ghanaian culture. Surprisingly, Ghana has a high representation of women in entrepreneurship as 60% of Ghanaian women are entrepreneurs, and yet only 42% of the Ghanaian men are entrepreneurs (Kelley et al., 2011). The highest average daily profit of entrepreneurs in Accra, Ghana is <USD35 with a percentage of 2.9% of the men earning it while none of the women earns such a daily profit (Overa, 2007).

According to Amoako-Kwakye (2012), the performance of female-owned businesses in Ghana will improve through incubation programs, and training on areas of establishing business associations and capacity building. Globally, incubated businesses have been estimated to have a survival rate of 70% post-incubation (Ogutu Oduor & Kihonge, 2016). Furthermore, based on a 5-years post-incubation, the survival rate of companies that worked with incubators is 87% (Ned, 2010). On the

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other hand, the survival rate for those companies that did not work with incubators is 44% (Ned, 2010). Hence, this paper examined the impact of gender barriers on female entrepreneurs in the tech sector using an incubator as a case study. This study used Meltwater Entrepreneurial School of Technology (MEST) incubator as a case study henceforth, Meltwater Entrepreneurial School of Technology (MEST) will be referred to as MEST incubator in this paper. Also, the term technology sector usually is interchangeably used and shortened to "tech sector". In this paper, the latter is mainly used.

Background

An empirical study by El-Hamidi (2011) on Micro and Small Enterprises managed by both men and women in Egypt revealed that women revenues were a third of that of the men. Besides that, this study revealed that there was no difference between men and women efficiency in managing their businesses and employment growth. However, women faced more challenges than men. These challenges included lacking collateral security to access bank loans since the women do not hold titles to their houses, lands or vehicles which they can present to acquire bank loans (El-Hamidi, 2011).

Similarly, women entrepreneurs in Accra are profoundly affected by traditional values (Hampel-Milagrosa, 2009). A lot of these women entrepreneurs are not able to access credit because they do not have collateral property since most of the women have their properties registered under the husband's names (Hampel-Milagrosa, 2009). Though, other problems that affect women entrepreneurs in Accra like length procedures for business registration, paying taxes among others are gender-neutral (Hampel-Milagrosa, 2009).

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Additionally, a study carried out by Frederick & Dzisi (2008) on 300 Ghanaian women entrepreneurs in Koforidua Municipality, Eastern Region of Ghana revealed that formal education and apprenticeships play a significant role in determining the success of their businesses. The skills and knowledge obtained from apprenticeships and education help these women in financial management and accountability (Frederick & Dzisi, 2008). Entrepreneurial development positively correlates with the level of training an entrepreneur receives (Meunier, Krylova, & Ramalho, 2017a). Training and incubation programs help entrepreneurs prepare to face challenges in business environments. (Meunier et al., 2017a).

The Business encyclopaedia defines a business incubator as a workspace that aims at offering resources to start-ups and new ventures. Incubators were primarily created to in-house businesses and provide office space, however, in the mid-2000s, accelerators were created to prevent the shortcomings of incubators (Pauwels, Clarysse, Wright, & Van Hove, 2016). An Accelerator refers to a program that provides education, mentorship and pitch days for companies to pitch for funding (Jefferson, 2017). In this study, business incubators and accelerators are used to mean the same thing.

The idea of business incubation started in 1942 with the Batavia Industrial Centre as the first documented incubator in New York, United States of America (Meru & Struwig, 2011). In Ghana, the history of incubators is unknown, however, according to the Daily Graphic (2010), the Government of Ghana established the first incubator in 2005 called the Ghana Multimedia Incubator Centre (GMIC). By 2016, Ghana had three business incubators (Ogutu Oduor & Kihonge, 2016).

A study in Kenya about the impact of incubators on 60 incubator graduates running small & medium businesses revealed that incubators are highly beneficial to

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the growth of the business. 63.9% of the respondents concluded that the program was somewhat beneficial, 27.8% regarded it as very beneficial, and 8.3% regarded it as slightly beneficial. Also, this study revealed that mainly male entrepreneurs patronise incubators. 63.9% of respondents in this study were males who had used incubation services, while only 36.9% of the women had used incubation services (Wanyoko, 2013).

Globally, 37% of the business incubators focus on the technological sector, which is dominated heavily by male entrepreneurs (National Business Incubation Association, 2014). Unlikely, women entrepreneurs focus in areas like health, education, agriculture, among others and yet most incubators mainly target Science Engineering and Technology (SET) sectors (McAdam, 2009). Generally, Science and technology sectors are supremacy projects of masculinity; in Europe, women own only 15% of technological businesses (Marlow & McAdam, 2012). Thus, this paper examined whether MEST incubator has any measure put in place to promote gender balance in their programs.

Problem statement

A survey carried out by Global Entrepreneurship Monitor indicates that approximately 60% of Ghanaian women are involved in entrepreneurship, and on the other hand, only 42% of the men are involved (Kelley et al., 2011). However, many Ghanaian women struggle to successfully establish and maintain their businesses (Dovi, 2006).

Incubators help in mitigating business challenges among the various entrepreneurs working in the same place (Ogutu Oduor & Kihonge, 2016). However, incubators are male dominated which does not favour women entrepreneurs; for example; The growthafrica accelerator offers programs in four African countries;

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Kenya, Uganda, Ethiopia and Zambia. Growthafrica offers business growth and acceleration programs to entrepreneurs who are scaling their businesses. Their programs have impacted 412 entrepreneurs, of which 68.2% are male entrepreneurs, and only 30.6% are women entrepreneurs (growthafrica, 2019).

Furthermore, the majority of incubators target the technological sector, which has more males than females (National Business Incubation Association, 2014). For example, in the European high technology business incubators, only 5% of women entrepreneurs are part of them (Marlow & McAdam, 2012). Hence, this shows a gender gap in the business incubators, most notably in tech incubators. Tech incubators are incubators that nurture businesses that are primarily focusing on technology-based solutions (Aernoudt, 2004). Therefore, this paper focused on examining the gender barriers of women entrepreneurs under a tech incubator.

This study was limited to Accra because it is the capital city of Ghana. Entrepreneurial activities take place mostly in the capital cities. Besides that, the majority of the tech incubators are in Accra, for example; iSpace Foundation, Mobile Web Ghana, Ghana Multimedia Incubator Centre, MEST Incubator, among others (Germaine, 2018). This research was further limited to only one tech incubator; MEST incubator because MEST has entrepreneurs from different parts of Africa which helped in getting different perspectives about gender barriers of entrepreneurship in the tech sector.

Research Questions

1. What are the gender barriers affecting women entrepreneurs in tech incubators in Greater Accra, Ghana?
2. How do the entrepreneurs in tech incubators in Accra measure their success?

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Aim

This study aims to find out whether any gender barriers are affecting the success of female entrepreneurs working with tech business incubators in Greater Accra, Ghana.

Specific objectives

The specific objectives of this topic are:

1. To document gender barriers affecting women entrepreneurs in tech incubators and what efforts incubators have made to eliminate these barriers.
2. To identify what defines success for an entrepreneur working in an incubator globally to aid in establishing how gender influences their success.
3. To recommend strategies that tech incubators and policymakers can adopt to improve the success rates of female entrepreneurs.

Scope of the study

This study focused on finding out the gender barriers that female entrepreneurs face in tech incubators located in Greater Accra. This study ran for one year, and it was geographically limited to Accra because the majority of the incubators are in Accra (Ghana Tech & Hubs Network, 2019). Tech incubators are incubators that nurture businesses that are primarily focusing on technology-based solutions (Aernoudt, 2004). This research was further limited to one tech incubator; MEST incubator because it has entrepreneurs from different parts of Africa which helped in getting different perceptions of entrepreneurs in developing economies.

Research Method

A similar study by McAdam (2009) in the Republic of Ireland explored the relationship between business incubators and Female High Technology

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Entrepreneurs. This study used case studies to explore this relationship, and it also further explored the experience of a female Science and Technology entrepreneur working under a business incubator in the Republic of Ireland. Also, an oral history perspective was used to collect information on a detailed life history. The respondent reflected upon her aspirations and emotional experiences of being a female entrepreneur within the SET sector. This study concluded that incubators were gendered and did not favour women, mostly the women that are parenting (McAdam, 2009).

Considering the above study; the method used provided in-depth details about the single respondent. Similarly, this paper used a qualitative approach to get in-depth experiences of the participant. Based on the fact that the participants in this research had different interpretations of their experiences with incubators, qualitative research would be the most appropriate method to use (VanderStoep & Johnson, 2008).

With regards to the qualitative data; various entrepreneurs in the MEST incubator in Accra and one of the facilitators were interviewed. The data collection was anonymous though it covered; demographics of the entrepreneur, the measure of success based on identified success factors from literature, the expectations of the various entrepreneurs and whether those expectations have been met or not, the future ambitions of the entrepreneurs in this incubator among others. Similarly, there was also an interview with one of the facilitators on how the incubator is eliminating gender barriers for female entrepreneurs.

Thematic analysis was used to analyse data in this research. The thematic analysis involves examining data to identify similar themes, patterns, ideas and meanings (Caulfield, 2019). Thematic analysis was suitable for this study because it helped in identifying themes and patterns in the interview data (Mortensen, 2019).

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Besides that, this study reviewed existing literature on entrepreneurship in Ghana, tech entrepreneurship, determinants of entrepreneurial success, business incubators, gender influences on entrepreneurial success in Ghana and theories associated with entrepreneurship.

Justification and Impact

Narrowing the gap in entrepreneurship will lead to the elimination of gender disparities which contributes to the Sustainable Development Goal (SDG) 5 (Meunier, Krylova, & Ramalho, 2017b). Gender Equality is the number 5 goal of Sustainable Development Goals. It aims at empowering women and girls to promote economic growth and also eliminating discrimination on women and girls (Meunier et al., 2017b).

Neglecting economic equality will make it hard for countries to accomplish the other SDGs or the 2030 Agenda for Sustainable Development (Meunier et al., 2017b). Therefore, this requires further research on the elimination of gender disparities in economic activities. This study helps in filling in the gap in the existing literature about gender disparities in entrepreneurship and also provide information that may help agencies make sound organisational decisions.

This study also aids in finding out the impact of tech incubators on entrepreneurial success. Besides that, research on tech incubators in Accra is unavailable, so this study particularly reveals the impact of tech incubators on entrepreneurs in Accra.

This research does not only add to the existing literature, but it benefits female entrepreneurs, funders interested in investing in female entrepreneurs, tech incubator owners, policymakers among others about strategies they can use to increase female performance in tech entrepreneurship.

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Thesis outline

This thesis has five chapters with Chapter 1 being the Introduction; the overview and background of the topic of study, short summaries on literature review and research methods used to study this thesis, Importance, and impact of the study among others. Chapter 2 is the Literature Review which includes the analysis of various concepts and models related to the topic and review of secondary data like case studies and journal articles.

Chapter 3 is the Methodology, and it has the Introduction of the research methods, research designs, sample size, research variables, data sources, the scope of the study, data analysis and limitations of the research. Chapter 4 has results and analysis, and it includes the interpretation and meanings of the findings. Finally, Chapter 5 is the conclusion and recommendations, and this chapter has a recap of the thesis, and it also provides recommendations to the study.

Conclusion

This study examined the gender barriers that female entrepreneurs face in the tech sector using MEST as a case study. This research is limited to only one tech incubator; MEST incubator because MEST has entrepreneurs from different parts of Africa. This helped in getting perspectives from entrepreneurs from different developing economies. This study used the qualitative method of research to get in-depth experiences of the various entrepreneurs. Data was collected from both the male and female entrepreneurs in the MEST incubator and one of the facilitators at this incubator using in-depth interviews. This data was then analysed using thematic analysis. Finally, this study provides recommendations to tech incubators, female entrepreneurs, policymakers, among others, about the strategies they can adopt to reduce the gender gap of female entrepreneurs in the tech sector.

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CHAPTER 2- LITERATURE REVIEW

Introduction

This chapter looks at the existing literature related to entrepreneurship in Ghana; gender comparison and participation in entrepreneurship in Ghana, how entrepreneurs determine success, business incubators and their role in society, and finally the theories in entrepreneurship. Numerous studies on the subject matter were considered and also related to this paper's research topic; Examining gender barriers of women entrepreneurs in tech. The literature review aims at fulfilling the second objective of this study which is; to identify what defines success for an entrepreneur working in a business incubator globally to aid in establishing how gender influences their success.

Entrepreneurship in Ghana

According to the 2019 World Bank's report on Doing Business, Ghana has improved its ranking from 120 out of 190 economies in 2018 to 114th position in 2019. Also, Ghana's ease of doing business score has increased by 2.06 to 59.22 (The World Bank, 2019). The new policies put in place by the Government of Ghana on strengthening quality control on constructions, simplifying the tax payment and easing trade across the Border led to these improvements (The World Bank, 2019).

However, as a British colony, Ghana still experiences the effect of colonial legacies. Most of the literate Ghanaians prefer white-collar jobs where they work with government institutions instead of starting their businesses (Frederick & Dzisi, 2008).

Statistics from the United Nations Development Programme on Human Development Reports (2019), indicate that 75.1% of the total population of Ghana aged 15 years and above are employed. On that, women compose 50.1% of Ghana's labour force, mostly participating in retail trade and micro enterprises (Human

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Development Reports, 2019). An estimated growth model with gender-related human capital accumulation estimates 2.5-3% increase in Ghana's economic growth if the potential of women is utilised to achieve gender parity (Agboli, 2007). Gender disparities in the level of education among women in non-OECD countries which Ghana is part; discourage women entrepreneurs from entering the high-skilled sectors, and cultural views on gender roles discourage male entrepreneurs from entering the low skilled sectors (Marques, 2017). Hence this paper examined the hindrances that women entrepreneurs face in entering the high-skilled sectors like the tech sector.

The development of the tech sector in Ghana is attributed to Ghana's first president; Dr Kwame Nkrumah, as he encouraged mastery of technology in Ghana. Dr Kwame pioneered technological projects in Ghana like the Volta Dam to provide electricity, and the Academy of Science for Scientific and technological research (Zachary, 2014). Additionally, Dr Kwame encouraged education and increased the levels of education in Ghana by establishing institutions of higher education, for example, the University of Ghana (Zachary, 2014). In 1989, Ghana set the first internet connection, and since then, Ghana's government and private sector have worked hard to maintain the regional lead position for ICT (Acheampong, 2012). Ghana has one of the most significant internet penetration rates in the region of about 4%- 6% with over 180 service providers (Acheampong, 2012). However, this rapid internet penetration was not easy for everyone to adopt.

An empirical study was carried out by Doss & Morris (2000), on Ghanaian men and women to find out how they adopted agricultural technology to produce maize. The agricultural technology included using modern varieties of maize and chemical fertilisers. The initial data on the Ghanaian maize growers were collected from a national survey carried out between November 1997 and March 1998 on maize

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growers. Then a representative sample of 420 maize farmers located in 60 villages was selected using a three-stage, clustered, randomised procedure. This study used questionnaires and found out that; with regards to adopting modern varieties, only 25% of the female respondents living in female-headed households adopted while 56% of the female and male respondents living in male-headed households adopted.

On the other hand, 22% of the female and male respondents living in male-headed households while 13% of the female respondents living in female-headed households adopted the use of fertilisers (Doss & Morris, 2000). According to Miller & Shrum (2011), men adopt new technologies earlier than women; however, when given time, women adopt too and get to the same level as men. Hence, this paper examined how gender barriers have impacted female entrepreneurs with a focus on those working in the tech sector.

Gender barriers in Entrepreneurship in Ghana

Ghana has a 0.91 gender development index which is the index that calculates gender equality (Human Development Reports, 2019). 60% of Ghanaian women are involved in entrepreneurship, while only 42% of the men are involved (Kelley et al., 2011). Considering the Mastercard Index of Women entrepreneurs, Ghana globally ranks as the second country with the highest number of women entrepreneurs after Uganda (Abbey, 2019). Despite the high percentage of women entrepreneurs, the highest average daily profit of entrepreneurs in Accra, Ghana is <USD35 with a percentage of 2.9% of the men earning it while none of the women earns such a daily profit (Overå, 2007). Furthermore, with an average daily profit of USD23-35, 5.9% of the men earn a daily profit between that range while only 1.5% of the women earn between that range. Looking at the lowest average daily profit of >USD2, a high

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percentage of 39.4% of women earned a daily profit in that range while only 11.8% of men earned that (Overå, 2007).

The above study by Overå (2007), considered entrepreneurs in Accra mainly in the informal sector in Makola, Agbogbloshie, Kantamanto, Kaneshie, Nima and Madina to find out the Gender relations in the informal sector in Greater Accra. This study interviewed 66 women and 34 men running businesses. The differences in the average daily profit resulted from the differences in profits to the time dedicated to business among the Ghanaian men and women. 65.2% of the women in this study worked between 10-12 hours a week with only one day off per week, while 35.3% of the men worked between 10-12 hours. However, the men worked long hours all day of weeks, hence increasing their turnover (Overå, 2007).

Furthermore, various hindrances have prevented Ghanaian women entrepreneurs from successfully running their businesses (Dovi, 2006). These hindrances range from legal issues to financial issues (Kwabena & Denanyoh, 2016). For example, a lot of women entrepreneurs in Ghana are not able to access credit because they do not have collateral property since most of the women have their properties registered under the husband's names (Hampel-Milagrosa, 2009). Besides that, the venture capitalists mainly invest in male-founded businesses. For example; the top 100 venture capital firms account for 92% of male partners, and yet only 2% of the total investments from venture capitalists are given to start-ups founded by women worldwide (Toesland, 2018).

Relatedly, a survey was done by Kwabena & Denanyoh (2016) in Sunyani and Techiman in the Brong Ahafo region of Ghana on women entrepreneurs running micro-businesses to find out the failures affecting them. From this survey, 95% of the

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questionnaires were answered with 61% of respondents from Techiman and 39% respondents from Sunyani. *Table 2:1* summarises the findings.

Table 2:1

Problems affecting women entrepreneurs in micro-businesses

	Mean	Std. Deviation	N
Difficult access to finance	3.7460	1.55510	133
Lack of information on business development	3.3492	1.43862	133
Shortage of skilled labour	3.6190	1.57017	133
Lack of networking abilities	3.3065	1.38598	133
Lack of business training opportunities	3.3710	1.57057	133
Lack of business support services	3.4194	1.58423	133
Location of business	3.5484	1.45622	133
Childcare responsibilities & family commitments	3.1290	1.52018	133

Source: (Kwabena & Denanyoh, 2016)

From *Table 2:1*, difficulty in accessing finance is a significant problem faced by the majority of the respondents since it has the highest mean value. Hence, this implies that many women entrepreneurs in Sunyani and Techiman have limited access to funding and have no collateral security to get loans (Kwabena & Denanyoh, 2016). Despite the continuous motives to foster financial inclusion, women entrepreneurs are still profoundly affected by financial issues like lack of access to capital (Meunier et al. 2017). According to the World Bank's Global Findex Database (2015), by 2011, only 47% of women entrepreneurs had bank accounts, yet 54% of male entrepreneurs had bank accounts. Later in 2014, the percentage of women of entrepreneurs that have bank accounts increased to 58% and 65% for the male entrepreneurs (Demirguc-Kunt et al. 2015). These percentages have increased though the percentage for women with bank accounts is still lower than that of the males.

Additionally, Aryeetey & Ahene (2005), carried out a study in Accra and Tema on the effects that public self-regulatory regulators have had on the performance of 200 Small and Medium Enterprises (SMEs) in the last decade. The

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study considered SMEs with less than 30 employees. The selection of these firms was random from the Registrar General's office, National Board for Small Scale Industries and the Association of Ghana Industries. The findings revealed that there were more male owners of firms compared to females despite females having a higher percentage in the participation of entrepreneurship than males. The high-risk aversion of Ghanaian women which makes these women enter into businesses with a shorter gestation period caused this variation (Aryeetey & Ahene, 2005). Additionally, this study revealed that Ghanaian women entrepreneurs take up short term businesses because of the cultural demands like lack of ownership of resources to invest in long term enterprises (Aryeetey & Ahene, 2005).

Technology Sector

The technology sector is a sector that involves companies that focus on research, development and distribution of goods and services that are technologically situated (Frankenfield, 2019). The term technology sector usually is interchangeably used and shortened to "tech sector". In this paper, the latter is mainly used. The tech sector involves the creation of products and services linked to information technology like computers, software, electronics, among others (Frankenfield, 2019). According to Wolinsky (2019), the tech sector is the fastest-growing sector in the world. This is due to the research, new developments and innovation that is being developed to drive the digital world forward (Wolinsky, 2019). On the other hand, this increase and innovation in the tech sector have led to high expenditures. In 2016, the tech sector was the highest spending sector in the world, with an expenditure of over \$6.3 trillion (Wolinsky, 2019).

However, research shows that there are few women in the tech sector, and they face many gender-related challenges compared to their male counterparts. For

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example, a survey carried out in the United Kingdom on women entrepreneurs in science, engineering, construction and technology sectors (STEM) found out that 40% of respondents had experienced gender-related difficulties in starting a business (Orser et al. 2012). According to Hill, Corbett and Rose (2010), women in STEM fields are double-blinded because they struggle to balance being likeable and competent. This is because women are judged to be less competent in masculine roles unless they exceed expectations and yet when a woman exceeds the expectations, they are less likeable (Hill et al. 2010).

To further examine this, this paper considers a study in Canada carried out on 115 women using qualitative research to determine the career challenges faced by women in the advanced tech sector (Orser et al. 2012). This study revealed that women in the tech sector are mainly employed in general roles like data entry. The respondents in this study also identified other gender-related challenges like; women entrepreneurs in the tech sector having limited access to capital as financial institutions perceive businesses owned by women to be in a lower category than those owned by men (Orser et al. 2012). This study recommended policies like diversity policies, employment equity, part-time work, flex time among others to reduce the gender gap in the employability of women in the tech sector (Orser et al. 2012).

This research considers another study carried out by Frederick & Dzisi (2008) on 300 Ghanaian women entrepreneurs in Koforidua Municipality, Eastern Region of Ghana, to determine their entrepreneurial activities. The entrepreneurial activities that these women were involved in were mainly trading activities and service industry with 26% and 21% respectively. According to Marques (2017), gender disparities in the level of education among women in non-OECD countries which Ghana is part; discourage women entrepreneurs from entering the high-skilled sectors, and cultural

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views on gender roles discourage male entrepreneurs from entering the skilled sectors. Furthermore, this study revealed that the personality traits of Ghanaian women entrepreneurs were noted to be similar to women entrepreneurs in the United States, Canada, Israel, Australia, and the United Kingdom (Lerner et al. 1997).

The findings also indicated that 64% of the women entrepreneurs believed that formal education and apprenticeships play a significant role in influencing the success of their businesses. The skills and knowledge obtained from apprenticeships and education help these women in financial management and accountability (Frederick & Dzisi, 2008). Research shows that providing subsidised training to entrepreneurs would help mitigate some entrepreneurial failures and increase the survival rate of businesses (McKenzie & Woodruff, 2014).

The performance of women's businesses in Ghana will improve through training on establishing business associations and capacity building (Amoako-Kwakye, 2012). Therefore, this calls for more educational training and programs for women entrepreneurs through business incubators. Incubation services and entrepreneurial success are positively correlated (Ned, 2010). After five years, the survival rate of companies that do work with incubators is 87%, and yet the survival rate for companies that do not work with incubators is 44% (Ned, 2010). Therefore, this paper examined whether any measures are being used by tech incubators to eliminate gender barriers and if these measures have been successful.

Business Incubators

Business incubation refers to tailored business support given to entrepreneurs in the form of targeted resources to accelerate their development (The National Business Incubation Association, 2009). The idea of business incubation started in 1942 with Batavia Industrial Centre as the first documented

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incubator in New York, United States of America (Meru and Struwig, 2011). In Africa, the idea of business incubators first started in Kenya in 1967 (Meru & Struwig, 2011). Ghana's history of business incubation is unknown, however, according to the Daily Graphic (2010), the Government of Ghana established the first incubator in 2005 called the Ghana Multimedia Incubator Centre (GMIC). This incubator was established to incubate ICT businesses and start-ups in order to promote ICT entrepreneurial development and technology commercialisation.

By 2016, Ghana had three business incubators (Ogutu Oduor & Kihonge, 2016). *Table 2:2* below shows some of the business incubators in Accra and the programs that they offer (Germaine, 2018). More so, this paper narrowed down to only one tech incubator; MEST because it has a wide range of entrepreneurs from different parts of Africa who provided different opinions on the subject under study.

Table 2:2:

Some of the Business Incubators in Greater Accra

Name of Incubator	Type
1. Impact Hub Accra	Plays the role of a hub, incubator and co-working space to any entrepreneur
2. iSpace Foundation	Targets Tech entrepreneurs and start-ups
3. MEST Incubator	Tech incubator and a hub for Software Entrepreneurs
4. SBINCUBATOR	Supports generational businesses
5. Ghana Start-up Capital – Business Incubation	Provides young entrepreneurs in any sector with funds and mentorship programs
6. Mobile Web Ghana	Tech hub with a focus on mobile technology entrepreneurs
7. Ghana Multimedia Incubator Centre	Focuses on young entrepreneurs who want to develop digital products and services
8. Ghana Innovation Hub	Hub for ideation, incubation and acceleration of any project

Source: Data about the type of incubators is from each incubator website.

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Business incubators are places established to house new businesses and promote entrepreneurial initiatives (The National Business Incubation Association, 2009). These new businesses get access to facilities like investors, credit, mentorship, among others to penetrate the market (Meru & Struwig, 2011). Business incubators foster relationships among the various entrepreneurs working in the same place (Ogotu Oduor & Kihonge, 2016). These kinds of relationships reflect the experiences and contacts gained in incubators in a short period (Redondo-Carretero & Camarero-Izquierdo, 2017).

Ogotu Oduor & Kihonge (2016), carried out a study on selected countries in Europe, Asia, America and Africa of which Ghana is inclusive, to determine the relationship between the Gross Domestic Product and the number of incubators in a country. This study revealed that there is a strong positive relationship between the two variables; hence, business incubators are a reliable instrument for entrepreneurship and the economic development of a country. This paper further examined how the MEST incubator in Accra has been impactful to the development of their participants.

A study carried out by Jaffee (2015) in North Carolina about females in Business incubation revealed that there is a gender gap in business size and ownership. Women face more difficulties in entrepreneurship like access to capital, low self-confidence, family responsibilities and risk aversion. Furthermore, this study reveals that business incubators are an excellent platform for women to overcome entrepreneurial challenges (Jaffee, 2015).

However, few incubators focus on primarily helping women despite being the gender that faces more entrepreneurial difficulties. According to the National Business Incubation Association (2014), 37% of the business incubators target the

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technology sector, which is dominated heavily by male entrepreneurs. Only 5% of women entrepreneurs constitute the European high-technology business incubators (Marlow & McAdam, 2012). Women entrepreneurs are focused in areas like health, education, agriculture, among others, and yet incubators mainly target Science Engineering and Technology (SET) sectors (McAdam, 2009).

Likewise, the interviews from this study revealed how males dominate traditional incubators, have policies and cultures that are not favourable for women like residency requirements. These challenges call for modification of traditional incubation to accommodate more women (Jaffee, 2015). In Ghana, MEST Incubator provides fully residency programs to entrepreneurs from various parts of Africa to take on their one-year training program. This paper narrowed to studying the MEST incubator in order to get various experiences of entrepreneurs in the tech sector coming from various parts of Africa.

MEST Incubator

MEST in full is Meltwater Entrepreneurial School of Technology. It is located in Accra; Ghana and Jorn Lyseggen founded it. MEST provides a 12 months fully sponsored residency training to tech entrepreneurs from across Africa. These entrepreneurs are referred to as entrepreneurs-in-Training (EITs), and these entrepreneurs are required to commit full-time to complete a graduate-level course in software development, communications and business over the 12 months. During this period, the EITs form groups and work on Capstone 1, Capstone 2 and the final capstone; Newco. At the end of each capstone, the groups pitch to the investors. However, seed funding is only awarded for Newco capstone presentation. The groups that win the seed funding are moved to the one-year incubator program. This research considered MEST as the sample size to find out the gender barriers that women

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entrepreneurs face in the tech sector. This paper further examined the determinants of entrepreneurial success of the EITs in the MEST incubator in order to; establish globally what determines entrepreneurial success (MEST, 2020).

Determinants of entrepreneurial success

Different theorists have come up with various roles of entrepreneurs.

According to Smith & Chimucheka (2014), some of the functional roles identified by theorists include; product owner, Innovator, speculator, coordinator, arbitrator, decision-maker, among others. Jennings (1994) summarised these roles and the particular theorist that contributed to the interpretation of each role. *Table 2:3* illustrates this;

Table 2:3:
Functional roles of entrepreneurs by various theorists

Economist	Concept of entrepreneurial function
Francis Edgeworth	Being a coordinator and middleman who never disappears, even in general equilibrium.
Alfred Marshall	Being a business leader and head of the firm-innovating, coordinating, responding to profit signals, and bearing risk.
Frederick Hawley	Being an owner or enterpriser who makes decisions regarding what product or service is to be produced and is also the bearer of uncertainty.
John Bates Clark	Not being an uncertainty bearer but an arbitrageur who shifts resources toward their most profitable uses
Irving Fisher	Being a bearer of uncertainty who reduces the randomness of uncertainty by making forecasts and deciding what to do based on subjective speculation. His role as a profit receiver makes him an important and distinct economic agent.
Frank Knight	Being a decision maker in an uncertain environment. In that role he determines consumer's wants and secures various services and materials to produce the product or service. Profits received are not for dealing with uncertainty-based differences between the anticipated value of resource services and their actual value.
Joseph Schumpeter	Being an innovator who carries out new combinations of economic development, which are new goods, a new method of production, new markets, new sources of raw materials, or a new organisational form.

Source: Smith & Chimucheka (2014)

Determining entrepreneurial success differs from one entrepreneur to another.

Nieman & Nieuwenhuizen (2009:14-19) agreed that creativity and innovation,

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leadership, positive attitude, commitment, perseverance, good human relations and risk orientation are the factors that determine the success of entrepreneurs.

Frederick & Dzisi, (2008), argued that financial indicators like profitability, business size, growth rates, number of employees, among others are used to determine entrepreneurial success. However, male entrepreneurs are more concerned with financial rewards compared to female entrepreneurs, and the latter is more concerned with personal achievement and level of self-fulfilment (Frederick & Dzisi, 2008).

In this study, entrepreneurial success is defined by entrepreneurs working with the MEST incubator since they are the main target of this research. Their views on entrepreneurial success were gathered through in-depth interviews.

Theories in entrepreneurship

Resource-based theory

This theory focuses on how entrepreneurs utilise resources to achieve entrepreneurial success (Eric, 2018). The resources include both tangible and intangible resources like capital, information, social networks, leadership, among others (Eric, 2018). This theory is essential in illustrating the performance and success of a firm (Eric, 2018). Furthermore, this theory was used to determine the performance of 171 female-owned businesses in the Accra-Tema Metropolitan area (Saffu & Manu, 2003). The dependent variables in this study were sales and profitability, and the number of employees and the independent variables were venture resources, strategic planning and previous business experiences and skills (Saffu & Manu, 2003). The results from this study were mixed; performance had a weak correlation with strategic planning, and business skills had a strong correlation with performance (Saffu & Manu, 2003). This theory was used in this research to identify resources that contribute to the entrepreneurial success of female

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entrepreneurs, and also the distribution of these resources across the two genders of entrepreneurs working in the MEST incubator.

Psychological theory

David McClelland, a Harvard emeritus professor, founded the psychological theory (Eric, 2018). According to Eric (2018), this theory focuses on how personality traits affect entrepreneurship. It looks at how the mental and emotional elements influence the entrepreneurial success of an individual. This theory involves; the personality traits theory, locus of control, and need for achievement theory. It looks at natural attributes that contribute to an individual's entrepreneurial drive. Personality traits like resilience and creativity strongly influence entrepreneurial success (Kwabena & Simpeh, 2011). Considering the innovation theory by Joseph A. Schumpeter, psychological elements like tolerance affect entrepreneurial performance. This theory was also used in this study to examine the various personality traits of both female and male entrepreneurs working in the MEST incubator and how this contributes to their success. Therefore, this aided in bringing out the attributes that affect female entrepreneurial success and performance in the tech sector.

Theoretical Framework

The theoretical framework in this study examines how gender barriers affect the entrepreneurial success of female entrepreneurs working under MEST incubator, Accra. The resource-based theory and the psychological theory was used to analyse the data from the research. A Harvard emeritus professor; David McClelland started the psychological theory (Eric, 2018). This theory focuses on how personality traits affect entrepreneurship (Eric, 2018). This theory was used in this study to examine the various personality traits of female entrepreneurs working under MEST incubator,

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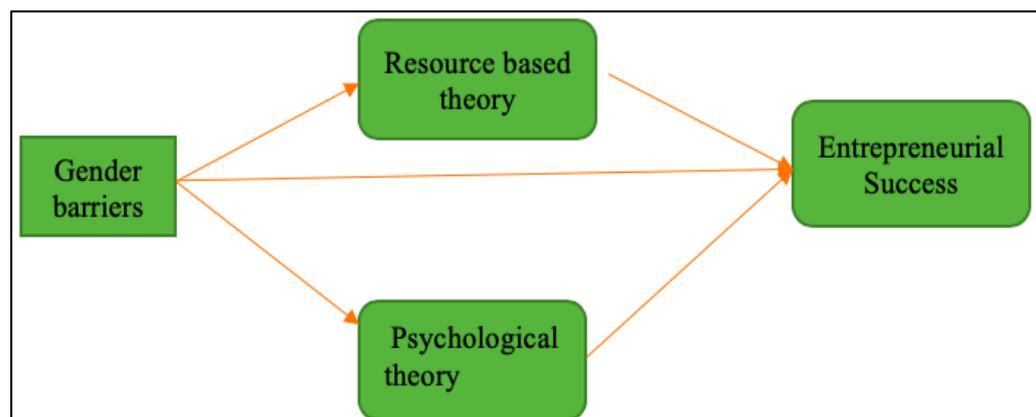
Accra and how this contributes to their success. This theory was used in this research to analyse the attributes that affect female entrepreneurial success and performance.

The resource-based theory looks at how entrepreneurs utilise resources to achieve entrepreneurial success (Eric, 2018). The resources include both tangible and intangible resources like capital, information, social networks, leadership, among others (Eric, 2018). This theory is paramount in showing the performance and success of a project (Eric, 2018). This theory was used in this paper to identify the resources that contribute to the entrepreneurial success of female entrepreneurs, and also indicate the distribution of these resources across the two genders of entrepreneurs working under MEST incubator.

In this research, the entrepreneurial success of female entrepreneurs was analysed by how female entrepreneurs utilise the specified resources at the tech incubator through the resource-based theory. This paper examined the entrepreneurial success of female entrepreneurs through the different attributes of entrepreneurs that contribute to their success.

Figure 2:4

Diagram showing the theoretical framework of this study



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Conclusion

From the literature review above, we can conclude that women entrepreneurs in Ghana face more difficulties in successfully running their businesses compared to their male counterparts. Most of these women have no training or educational background to equip them with the right skills to run a business (Frederick & Dzisi, 2008). Furthermore, Ghanaian women entrepreneurs face a massive challenge in accessing finance since some of these women have no collateral security to get loans (Hampel-Milagrosa, 2009). However, all the studies above did not involve women entrepreneurs working under incubators in Ghana. Therefore, this paper examines gender barriers that of female entrepreneurs, especially those under tech incubators in Greater Accra.

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CHAPTER THREE: METHODOLOGY

Introduction

This study aims at investigating the gender barriers faced by female entrepreneurs in tech incubators in Greater Accra, Ghana. This chapter explains the research methods and design used to collect and analyse data to attain the first and second objectives of this research. The first objective is to document gender barriers affecting women entrepreneurs in tech incubators and what efforts incubators have made to eliminate these barriers. The second objective is to identify what defines success for an entrepreneur working in a business incubator globally to aid in establishing how gender influences their success. Besides that, this chapter comprises research design, research questions, the scope of the study, study population, sample size, sampling strategy, data analysis, limitations and ethical considerations.

Research Design

This paper aims at capturing profound experiences of the individual entrepreneurs working under tech incubators in Greater Accra. Therefore, this study used explanatory/analytical research; a method of research that gives deep insight into a specific subject (Yousaf, 2019). Explanatory research provides detailed information about the study (Yousaf, 2019). Explanatory research involves both primary and secondary research methods. Primary research methods involve collecting the required information from the research participants (Bhat, 2018). Primary research uses surveys, interviews, focus groups and observations. Secondary research involves collecting information from existing research. This type of research collects information from books, case studies, magazines, newspapers, among others. Secondary research gathers data from online research, Literature research and case study research (Bhat, 2018). This study used both primary and secondary data. The

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primary data was obtained through in-depth interviews, while the secondary data was obtained from literature research. The data collected from both the primary and secondary research can either be qualitative or quantitative (Pickell, 2019).

Qualitative data involves using categories and themes to interpret data. It gives a more in-depth analysis and also used when looking for different interpretations from different participants (VanderStoep & Johnson, 2008). On the other hand, Quantitative data refers to using numbers and values to measure data. This method is statistical and structured in nature, and this makes it more rigid (Pickell, 2019).

Considering, a similar study by McAdam (2009) in the Republic of Ireland explored the relationship between business incubators and Female High Technology Entrepreneurs. This study used a detailed case study on a female high technology owner working under an incubator. This aimed at illustrating the arguments on the roles of business incubators as gender-neutral places. This study used only one female respondent because she was the only female high-tech entrepreneur working among the 20 incubators in the country. Moreover, an oral history perspective was used to collect information on the life history of the participant. The respondent reflected upon her aspirations and emotional experiences of being a female entrepreneur within the SET sector. This study analysed the data using post-structural feminist theory to compare the themes identified with the broader conceptual framing. Finally, this study concluded that incubators were gendered and did not favour women, mostly women that are parenting.

Considering the above study; the method used provided in-depth details about the single respondent. Similarly, this paper used a qualitative approach with entrepreneurs from MEST incubator to get in-depth experiences of the participants. Based on the fact that the participants in this research have different interpretations of

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their experiences with MEST incubator, qualitative research would be the most appropriate method to use (VanderStoep & Johnson, 2008).

Data Collection/ Research Method

The above paper used in-depth interviews, and literature searches as the methods of explanatory research. This study also uses the two methods of research because these methods enabled this study to get different in-depth opinions and experiences.

Interviews involved getting the research participants to express their opinions and experiences in the area of study by asking them questions (Bhat, 2018). The researcher interviewed both the female and male entrepreneurs at MEST incubator and one of the facilitators at this incubator. The interview questions for the two categories of people that were interviewed are attached as *Appendix 1.1 and 1.2*

While Literature research involves collecting information from sources like magazines, libraries, articles, published statistics, books, among others, the information collected has to be related to the subject of study. Chapter 2 contains the Literature research of this paper.

Research Questions

1. What are the gender barriers affecting women entrepreneurs in tech incubators in Greater Accra, Ghana?
2. How do the entrepreneurs in tech incubators in Accra measure their success?

Scope of the Study

This study was geographically limited to Greater Accra because the majority of the incubators are in Greater Accra (Ghana Tech & Hubs Network, 2019). According to Ghana Tech & Hubs Network (2019), there are over 24 incubators in Ghana, of

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which 13 and more are in Accra. Moreover, this study did not involve entrepreneurs in tech incubators outside Greater Accra and other entrepreneurs working under incubators that serve ventures in multiple sectors: the sample was limited to incubators that help only tech ventures. Tech ventures are ventures with solutions that are technological based (Aernoudt, 2004).

Study Population

Study population refers to the general group of people that a study is targeting (Banerjee & Chaudhury, 2010). The total population for this research includes all the private tech incubators in the Greater Accra Region. This is because private incubators do not involve long bureaucratic processes to be accessed. *Table 3:1* shows a list of the private tech incubators within Accra.

Table 3:1

List of private tech incubators in Greater Accra

Name of tech Incubator	Aim
1. iSpace Foundation	Targets Tech entrepreneurs and start-ups
2. MEST Incubator	Tech incubator and a hub for Software Entrepreneurs
3. Mobile Web Ghana	Tech hub with a focus on mobile technology entrepreneurs

Source: (Germaine, 2018)

From the above list of private incubators, the sub-population that was used in this study is MEST incubator. This is because MEST Incubator has a wide range of entrepreneurs from across Africa. This helped in getting different opinions and perceptions from entrepreneurs coming from the different parts of Africa.

Sample size

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Sample size refers to the number of actual participants involved in research (Banerjee & Chaudhury, 2010). The sample size of this study depended on saturation. According to Marshall, Cardon, Poddar, & Fontenot (2013), saturation is the best method to determine the sample size for qualitative studies. Saturation refers to a point in the research where additional participants will not give any new findings. Saturation in interviews occurs between 10- 30 interviews. In this study, the sample size was 15, which is between 10-30 participants (Marshall et al., 2013).

Sampling strategy

This study used purposeful sampling. Purposeful sampling involves getting participants based on their qualities (Etikan, 2016). Purposeful sampling uses different techniques in sampling, for example; maximum variation sampling, homogeneous sampling, total population, expert sampling, homogeneous sampling, among others (Etikan, 2016). This paper used maximum variation sampling, which involves choosing the research participants from a broad spectrum to ensure a wide variety of participants (Etikan, 2016). Therefore, the participants were selected based on their nationalities. The participants were from 11 countries; Ghana, Zimbabwe, United States of America, Kenya, Mali, Congo, Côte d'Ivoire, Nigeria, Lesotho, Ivory Coast, Benin. Furthermore, this research targeted more females than males because the researcher was interested in finding out the gender barriers that female entrepreneurs face in the tech sector.

Data Analysis

The data from this study were analysed using thematic analysis. The thematic analysis involves examining data to identify similar themes, patterns, ideas and

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meanings (Caulfield, 2019). Thematic analysis was suitable for this study because it aided in identifying themes and trends in the interview data (Mortensen, 2019).

According to Aronson (1995), the first step in the thematic analysis is creating themes from the data you have collected. These themes were divided into sub-themes to develop patterns. The researcher followed up on the research participants to validate the patterns. Finally, the literature analysed in this study was used to make arguments (Aronson, 1995).

During the thematic analysis, the researcher examined the interview data and gave codes to describe it (Mortensen, 2019). Patterns or themes from the codes were developed. Additionally, themes were developed, revised and named (Mortensen, 2019). Finally, the analysis was produced, and this is in Chapter 4 of this paper.

Limitations of the research

The limitations of this research arose from the lack of enough volunteers to participate in the interviews. This research targeted entrepreneurs who do not have time to participate in this study. Another limitation of this research is the lack of published research on the topic under study. There is no published research on the performance of incubators in Ghana (Ogutu Oduor & Kihonge, 2016). Furthermore, there is little about the history of incubators in Ghana, which limits the literature research on the scope of incubation in Ghana (Ogutu Oduor & Kihonge, 2016).

Ethical considerations

Ethics in research are norms of conduct that differentiates what behaviour is acceptable and unacceptable during the research process (Resnik, 2015). Ethics help to omit errors from the research, which may lead to misrepresentation and also helps the public to hold the researcher accountable (Resnik, 2015). This study used ethical

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considerations adopted from Bell, Bryman, & Harley (2018). The ten points below represent the most important ethical considerations in research (Bell et al., 2018):

1. This study protected research participants from any harm.
2. Research participants were treated with respect and dignity.
3. Research participants were asked for full consent to participate in the research before the study.
4. The privacy of the research participants was assured.
5. Adequate confidentiality was used to handle the data of the research.
6. Any individuals and organisations that participated in this research remain a private matter unless granted permission from them.
7. There was no exaggeration or deception about the aims and objectives of the study.
8. There was a declaration of any affiliations, sources of funding, and any conflicts of interests.
9. There was transparency in any communication related to the research.
10. There was no misleading information and misrepresentation of primary data findings in this study.

Finally, every participant was given consent forms before they participated in the research. These consent forms incorporated the above principles on ethical considerations. Besides that, the researcher obtained approval from the Institutional Review Board at Ashesi University to be granted the required level of reliability for the study.

Validity and reliability

According to Leung (2015), validity ensures that the research findings are accurate and appropriate. On the other hand, reliability looks at the degree of

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replicability of the results (Leung, 2015). This study used the argumentative validation technique to validate the research findings. This technique involves validating the conclusions from a study against a similar study (Kane, 1990). Therefore, the researcher in this study validated the results with other tech incubators in Ghana. The researcher interviewed a female entrepreneur in Ashesi Venture Accelerator, whose project falls under the tech sector. This aimed at finding out how the results from this study apply to her and the incubator she is part of. The research participant also attributed her success to the incubator, and she had also not faced any gender barriers within the incubator. However, she had experienced them outside the incubator.

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CHAPTER 4: ANALYSIS OF RESULTS

Introduction

This chapter includes the results collected from entrepreneurs in training (EITs) from MEST and one of their facilitators using in-depth interviews. The primary purpose of these interviews was to fulfil the first objective of this study; to document gender barriers affecting women entrepreneurs in tech incubators and what efforts incubators have made to eliminate these barriers. This chapter also includes the analysis of the interview results using thematic analysis. The main themes were developed, and sub-themes were also developed under the main themes.

Demographics of participants in the study

This research is anonymous; therefore, there was no recording of the participant's biographies and private information. Also, participants' identity was anonymous during the dissemination of the results.

This paper used in-depth interviews as a means of data collection in order to get research participants to express their opinions and experiences by asking them questions (Bhat, 2018). MEST currently has 54 EITs enrolled of which 14 are female. Plus, there are 14 nationalities represented in the 2019 EITs class. This study used purposive sampling according to nationalities in order to get perspectives from the various nationalities represented at MEST. The researcher carried out fifteen interviews. Fourteen interviews were from EITs at MEST while one interview was on one of the facilitators at MEST. The fourteen participants are from 11 countries; Ghana, Zimbabwe, United States of America, Kenya, Mali, Congo, Côte d'Ivoire, Nigeria, Lesotho, Ivory Coast, Benin. Furthermore, of the fourteen interviews, 5 (36%) were males, while 9 (64%) were female. This study involved more females

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than males because the researcher was interested in finding out the gender barriers that female entrepreneurs face in the tech sector.

Data Analysis process

The researcher of this study recorded the audios from each interview with the permission of each research participant. Furthermore, the researcher developed transcripts from each of the audios, and the study was analysed using thematic analysis. Thematic analysis was suitable for this study because it helped in identifying themes and trends in the interview data (Mortensen, 2019). The first step the researcher considered in analysing the data was creating themes; then these themes were subdivided into sub-themes then patterns were developed.

Generation of the themes

The researcher carefully examined the interview data and gave codes to describe it. Patterns or themes from the codes were developed, revised and named (Mortensen, 2019). Additionally, sub-themes were categorised and placed under one broad theme. There were three themes created; Assumptions and expectations, Mentorship, and Resources. The sub-themes under each theme are represented in *Figure 4:1* below;

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Figure 4:1

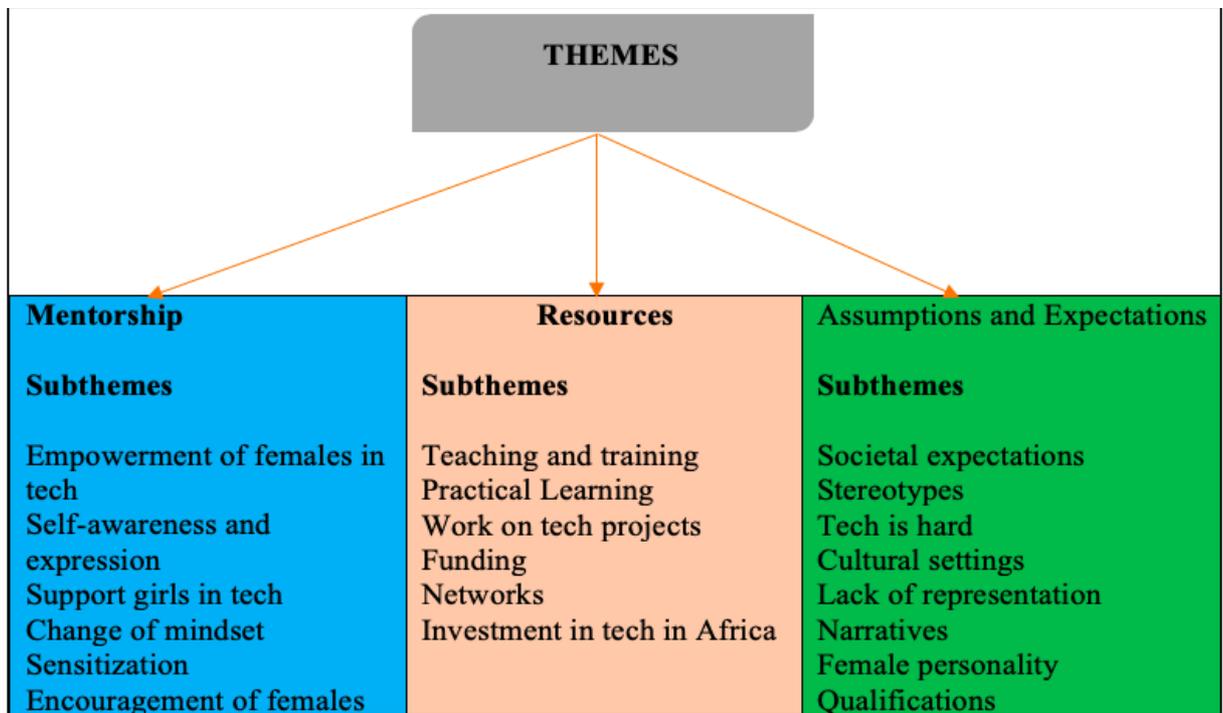
Themes Generated

Image source: Interview data

Theme: Mentorship

The research participants believe that with an early tech background education and mentorship, more women will be able to join the tech sector. Hence developing their tech skills, empowering females in tech, creating self-awareness among women in tech, encouragement of females to join tech, and it will finally change the mindset of females who think tech is hard. 100% of the research participants indicated that they had at some time received advice and mentorship about tech before they joined MEST. They attributed this mentorship to friends, employers, tech programs like Developer's in Vogue, among others.

Furthermore, the EITs showed a willingness to pass on this mentorship to other females that have a passion for tech but do not know how to start. Some of the

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EITs have already established projects to mentor high school girls in tech; for example; one of the female research participants started a project called Technovision.

"Technovision is a program that helps high school students learn about tech early enough to come up with ideas and use tech knowledge. So, a mentor is given five ladies as mentees. These mentees come up with an idea themselves, but you guide them on how to pitch. Some companies sponsor the events. After mentoring the first batch, 90% of the mentees wanted to do tech-related stuff in University. I then started mentoring the coaches; those who mentor students." (Research participant, 2020)

These findings correlate with the Frederick & Dzisi (2008) study, that indicated that 64% of the women entrepreneurs believe that formal education and apprenticeships play a significant role in influencing the success of their businesses. The mentorship and training encourage women participation in entrepreneurship, help mitigate some entrepreneurial failures and increase the survival rate of businesses (McKenzie & Woodruff, 2014).

Theme: Resources

Additionally, the EITs believe resources like training, funding, networks among others should be made available to encourage and increase women participation in tech entrepreneurship. One of the research participants believes that platforms like MEST provide a good network for someone in tech;

"I am grateful for the network I have at MEST. We have people from 14 different countries, and they bring unique perspectives, cultures, and contributions." (Research participant, 2020).

The EITs also attributed their career development in tech to resources that MEST provides, for example, the capstone projects that they work on in teams, the practical learning where they implement whatever they learn in projects for example

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branding and also the unique skills taught. One of the research participants commented;

"When I joined, I wanted to make a subscription box where women can be reached out. However, at MEST, I was taught how to ensure that you solve the problem of the user and studying the different personas to know who they are. So, we changed the business model. This is something I would not have known if it were not for MEST."

(Research participant, 2020).

According to Amoako-Kwakye (2012), the performance of women's business in Ghana will improve through training on establishing business associations and capacity building. This is in agreement with what the research participants believe about providing training and practical education. Therefore, this calls for more educational training and programs for women entrepreneurs through incubators. Incubation services and entrepreneurial success are positively correlated (Ned, 2010).

Theme: Assumptions and Expectations

From the interview data, the research participants believe there are a lot of assumptions and expectations surrounding the tech sector and also women joining the tech sector. Some of the assumptions surrounding tech are stereotypes that tech is hard, and the other assumptions are on women entrepreneurs in tech. For example, societal expectations of the women to stay at home and take care of the children. One of the female research participants commented that;

"Girls need to plan their lives as when to marry and have children as one of my friends back home did not want to join MEST as she wanted to concentrate on getting married." (Research participant, 2020)

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Also, there are different expectations surrounding tech incubators that may not favour women entrepreneurs with children. Incubators have policies and cultures that are not favourable for women like residency requirements (Jaffee, 2015). One of the female research participants commented that;

"MEST does not allow students to have children at school, so it may not be favourable for women with children. This may be a hindrance for some girls to apply to MEST."

(Research participant, 2020)

Similarly, this finding relates to a study by Marlow & McAdam (2012) that revealed how incubators are male dominated due to policies and cultures that are not favourable for women like residency requirements. Such requirements do not favour female entrepreneurs that are parenting. These barriers call for modification of traditional incubators to accommodate more women to increase the number of women entrepreneurs in tech.

Gender Barriers faced by EITs

This is aimed at answering the research question 1 which is; What are the gender barriers affecting women entrepreneurs in tech incubators in Greater Accra, Ghana. From the research results, none of the participants in this interview has ever faced any gender-based challenges at MEST. One of the research participants indicated that every EIT is seen at the same level, and sanctions are put on those who may try to look down on the other.

"At MEST? No! If it is noticed that there is any sort of that imbalance, the guy is sanctioned. It is not allowed. Everybody is seen at the same level, and whatever is done to the guys is done to the girls. As a matter of fact, in this Capstone 2 that we are headed into, I am leading guys. I am the only girl in my team, and the team lead, so they have to listen to what I say." (Research participant, 2020).

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Table 4:1

Excerpts on gender-based challenges in the tech sector

No.	Respondent's Gender	Quotation	Implications
1.	Female	<i>Yeah, like in the US, it was mostly like black-based challenges. Here, it is hard to navigate situations where you are trying to be professional with a man who wants to approach you differently, in a way that may be sexual because you are beautiful.</i>	Sexual harassment
2.	Female	<i>Personally, no. I know that there is a lot of gender bias in tech, but it has not happened to me. I think that the fact that people have raised awareness about it has helped, so many people are becoming more conscious of it. I suppose that has helped me.</i>	Continued eradication efforts
3.	Male	<i>Yes. I would not know. Because maybe I was given things because I was male, but they would not say. In the one competition, I was part we had only one group among the winners which had a female in it.</i>	Gender privileges
4.	Male	<i>I like to look at Africa, and I think that more attention is given to the men and I do advocate for women too. Tech is not just about coding, and we should work on making tech an environment that women would like to take part in</i>	Gender privileges
5.	Female	<i>I would not say I have, personally. However, when I was at Fidelity bank, I just had the experiences of work pressure. From my experiences, however, I feel that when guys see that a girl is doing well in the tech industry, there is this respect they tend to give the girl. They see you as different from other girls. I do not know if others have faced—I cannot speak for everyone—but for me, I have not faced any.</i>	Accorded Respect
6.	Female	<i>Not many challenges. It was only during a meeting where I said a point that was never really appreciated, but when a man said the same point, he was appreciated and recognised. Other than that, I have just encountered more favours and benefits as a female</i>	Gender privileges Extra assurance
7.	Female	<i>Apparently, no. If you want to get something just because you are a lady, you will not get it, but just go there and perform, then you will get it. (not clear: I guess the point is that apply because you want and qualify for the opportunity not because of gender)</i>	Qualifications requirements
8.	Female	<i>I do not think there are any challenges. For what you want, if you put in the effort that's required, you will</i>	Qualifications requirements

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		<i>always have your respect in place. There are a small number of us, so we do stand out. I do not know if other females have different experiences, but I think the group we have is conscious. We all came here because we qualified not because one is a female or male.</i>	
9.	Male	<i>No, I have not faced any</i>	None
10.	Female	<i>No, you have to work with many men and ensure you establish your voice to be heard while also mastering your emotions. Once you have learned that, It is easy. I have not experienced any biases. Just like when I joined University to study Business Administration. My sister encouraged me to do tech, but I was scared because I had a background in Business</i>	Extra assurance
11.	Female	<i>No, actually in my national service they were happy to see a girl join them, so they were willing to help me learn. Even at MEST, I have not faced anything.</i>	None
12.	Male	<i>Yes, I faced it in Cot DeVore, and women's mindset In Congo is that they know more than men.</i>	Cultural stereotyp
13.	Female	<i>The women are looked at as weak, and they will give you simple things to do. They may not care about you because you are a girl. They do not believe in your skills which makes you feel like you are less capable. One job I was interviewed for I was told that the work is hard, and they work for many hours and from morning to evening, and you are a woman you may have children soon and do not have time to work with us. I told them that if I were a man, you would not ask me this question and they all kept quiet.</i>	Extra Assurance
14.	Male	<i>I haven't</i>	None

Data Source: Interview data

From the above *Table 4:1*, only 14.3% (2 female participants) had directly faced gender challenges in the tech sector outside of MEST incubator. On the other hand, 7.1% (1 male participant) had directly faced gender challenges in the tech sector, also outside MEST. However, 50% (7 participants) had not directly faced any gender barriers, but they had heard of the challenges that women entrepreneurs face in the tech sector. Finally, none of the research participants had experienced any gender

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challenges at MEST incubator. This incubator treats both genders as the same and all the resources are provided to all genders equally.

Furthermore, gender privileges, qualification requirements, and extra assurance prevailed among the responses about gender barriers that the EITs at MEST had faced. Gender privileges in this context are things that a specific EIT got because they were of a particular gender. Three of the male research participants mentioned having been given things just because they were male. Besides that, qualification requirements imply that every person receives what they deserve according to their qualifications despite their gender. Two of the research participants believe that women who qualify to join the tech sector will join and thrive in it.

With regards to extra assurance, it involves a specific gender having to go an extra mile to prove that they can do a specific task. Two of the female research participants have encountered situations where they had to prove themselves that they were in a position to deliver just like their male counterparts. One of the female research participants mentioned her opinion about a discussion not being recognised and when a male said the same point it got appreciated.

It was only during a meeting where I said a point that was never really appreciated, but when a man said the same point, he was appreciated and recognised. (Research participant, 2020).

This finding correlates with the study by Hill, Corbett and Rose (2010) about women in STEM fields being double-blinded because they struggle to balance being likeable and competent. This is because women are judged to be less competent in masculine roles unless they exceed expectations and yet when a woman exceeds the expectations, they are less likeable (Hill et al. 2010).

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How EITs determine their entrepreneurial success

This is to answer the research question 2; How do the entrepreneurs in tech incubators in Accra measure their success? According to Nieman & Nieuwenhuizen (2009:14-19), defining entrepreneurial success differs from one entrepreneur to another. Some entrepreneurs consider one these to determine entrepreneurial success; creativity and innovation, leadership, positive attitude, commitment, perseverance, good human relations and risk orientation, among others. Another study argued that financial indicators like profitability, business size, growth rates, number of employees, among others, are used to determine entrepreneurial success (Frederick & Dzisi, 2008). Furthermore, this study indicated that male entrepreneurs are more concerned with financial rewards compared to female entrepreneurs, and the latter is more concerned with personal achievement and level of self-fulfilment (Frederick & Dzisi, 2008).

In this paper, entrepreneurial success was defined by entrepreneurs working with MEST incubator, and the results were compared with Frederick & Dzisi (2008) on how the different genders define entrepreneurial success. *Table 4:2* shows how EITs determine entrepreneurial success.

Table 4:2

Excerpts of how EITs define entrepreneurial success

No.	Gender	Quotation	Success Determinant
1.	Female	<i>I measure the success of my business by comparing where we were yesterday and where we are today. Are we innovating? Are we meeting new clients? What is the overall revenue being generated? Etc.</i>	Innovativeness Expansion Revenue
2.	Female	<i>For the capstone project, for example, being able to come up with a viable business was what I considered a success. If I had a business, I would consider success as</i>	Customer satisfaction Problem-solving

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		<i>being able to reach the target market and solve a needed problem, then to me; you are successful.</i>	
3.	Male	<i>Having experience that enables me to create a design that people like and have lots of money for supporting my little siblings</i>	Customer Satisfaction Money
4.	Male	<i>Entrepreneurship is about money, and so making money is my success.</i>	Money
5.	Female	<i>For me, it is the impact. For example, Ujenga, we are helping people to build safe housing with limited resources. For buddies in tech, we are trying to bring many women on board, who are being left out in this fast-growing tech world.</i>	Impact
6.	Male	<i>I am a curious person. So, if I have a hypothesis and I put it out successfully, that is success to me.</i>	Implementation
7.	Male	<i>For me, success will be acquiring customers and expansion across a set boundary. For instance, success in my last project would be for my business to expand across West Africa in two years.</i>	Customer acquisition Expansion
8.	Female	<i>Growth and Sustainability</i>	Growth Sustainability
9.	Female	<i>Success is having customers, making a good revenue, and solving a problem.</i>	Customer acquisition Revenue Solving a problem
10.	Female	<i>Since I have been here, I have been thinking about SMEs, how to make profits, how to make processes easier. In doing that, the business moves, and scaling happens.</i>	Money
11.	Female	<i>I cannot talk about that now because I do not have anything to show I have made success in this area. However, you can ask other people about this. Some people are running personal businesses outside of MEST. They would be more suited to answer this question. However, I can provide help and business ideas based on what I have gained from MEST.</i>	Not sure
12.	Female	<i>Impact and money- profitability- the same level</i>	Impact Money

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13.	Female	<i>For me; solving a problem, profit and having a social impact but I think; Girls, it about money, social life and Boys it is about money</i>	Social impact
14.	Male	<i>It is keeping the business running. However, if it stopped running, so that is how I know that I failed.</i>	Sustainability

Data Source: Interview Data

From *Table 4:2*, the EITs at MEST determine success through Innovativeness, Expansion, Revenue, Customer satisfaction, Problem-solving, Impact, Implementation, Customer Acquisition, Expansion, Growth and Sustainability. Money has the highest percentage of 43%, followed by Sustainability, with a percentage of 29%. The majority consider money. Approximately 43% of the EITs consider money or revenue as their determinant of success, while only 21% of the EITs consider impact. The former percentage has 29% female and 14% male while the latter has 100% female. Comparing and contrasting it with the Frederick & Dzisi (2008) study, it is similar that females determine their success through impact compared to males at MEST. Contrary, females who consider money or revenue as a determinant of success at MEST had a higher percentage of 29% compared to only 14% of the males. However, this study had higher female participants; 9 (64%) and only five males (36%).

Discussion of findings in relation to the Resource-based Theory

According to Eric (2018), this theory focuses on how entrepreneurs utilise resources like capital, information, social networks, leadership, among others to achieve entrepreneurial success. This study uses this theory to analyse how the various resources at MEST influence the success of female entrepreneurs. This theory was used to identify the resources that contribute to the entrepreneurial success of female entrepreneurs, and also indicate the distribution of these resources across the

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two genders of entrepreneurs working under MEST incubator. From the research, there was no particular resource at MEST geared to only a specific gender. However, according to the facilitator that participated in this study, there is a pipeline project that MEST has started with Developer's in Vogue to improve gender balance at MEST.

"Early this year, we started a program with Developer's in Vogue to create a pipeline for the ladies where we take them to the boot camp for five weeks to prepare them. Those that successfully pass the Bootcamp will now fit our recruitment pipeline so we hope we can improve gender balance." (Research participant, 2020).

Furthermore, one of the research participants indicated that the females at MEST had created a WhatsApp group that they use to encourage each other;

"Yeah, we have something called FEMEST group, which we started as EITs just to encourage women in tech and also to guide each other and do some community projects. We also bring successful ladies in tech to come and talk to us. So, it is like an organisation to support women. It is an advantage to us ladies; for instance, we have been going to do yoga, and people can share stories and challenges they face." (Research participant, 2020).

Generally, the research participants attributed their entrepreneurial development at MEST to resources like class works and assignments, which include pitches, debates, group works. The EITs are also motivated by the funding provided to teams that pitch well their final capstone.

Discussion of findings in relation to Psychological theory

This theory focuses on how personality traits affect entrepreneurship (Eric, 2018). It considers how natural attributes contribute to an individual's entrepreneurial drive. According to Kwabena & Simpeh (2011), personality traits like resilience and

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creativity strongly influence entrepreneurial success. This theory was used in this study to examine the various personality traits of entrepreneurs at MEST incubator and how this contributes to their success. This theory was used in identifying specific attributes that affect female entrepreneurial success and performance.

According to the MEST facilitator who participated in this research, there are no specific personal traits they consider while recruiting EITs except the resilience of the person. Furthermore, he added on that there was no difference in the performance of female and male EITs at MEST. Additionally, none of the EITs had seen a difference in the performance across the female and male EITs. When asked about their interactions with the activities at MEST, one of the female research participants mentioned that they were interesting, and she also has not seen any difference between the female and male EITs with regards to interaction with these activities; *"Interesting, there are different points of view from people. I was the only girl in the team of 4, and I did not see any difference between them and me"* (Research participant, 2020).

The EITs attributed their performance to a demanding personality that includes; hard work and curiosity. They mentioned having gone out of their way to learn new languages in coding and asking their fellow EITs to teach them. One of the research participants mentioned how his curiosity in computing started in secondary school;

"While in secondary school, I used my holidays to learn about basic computing like Microsoft packages, and that was where I developed an interest. Though I did not want to study it as a degree, I learnt how to make websites while I am at University and have not gone back ever since." (Research participant, 2020).

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In conclusion, curiosity, resilience and hard work have made the EITs so far to be successful in the tech sector. Furthermore, there are no distinctive personality traits among female and male entrepreneurs at MEST.

Ambitions of EITs after the Incubation program

This was aimed at finding out the impact of the incubation program to the EITs. 100% of the EITs that participated in this research were aiming at receiving funds at the end of the incubation program, and they will use these funds to start tech businesses or establish their final capstone projects. MEST gives funds to teams that pitch well during their final project presentations. The presentations are in a team of either three or four. When given funds, these team members share ownership among each other. However, 20% of the company goes to the investor who provided the funds.

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CHAPTER 5: CONCLUSION & RECOMMENDATIONS

Introduction to the Chapter

This chapter summarises the research, the findings of the research and their implications, and it further suggests recommendations to the tech entrepreneurship sector in Africa. Finally, this chapter also provides the limitations of this research and the recommendations for further study.

Summary of Research

This study aimed at investigating the gender barriers affecting the success of a female entrepreneur in a tech incubator in Greater Accra, Ghana. This research had three main objectives; to document gender barriers affecting women entrepreneurs in tech incubators and what efforts incubators have made to eliminate these barriers. The second objective was to identify what defines success for an entrepreneur working in a business incubator globally to aid in establishing how gender influences their success. Finally, the third objective was to recommend strategies that tech incubators can adopt to improve the success rates of entrepreneurs. The research used both secondary and primary data. The secondary data were obtained from the literature review of online publications, while the primary data was obtained from interviews carried out at MEST.

This research considered MEST incubator as a primary data source because it has a wide range of entrepreneurs from across Africa. It aided in getting different opinions and perceptions from entrepreneurs coming from the different parts of Africa. The participants in this research were 14 entrepreneurs in training (EITs) at MEST and one of their facilitators. The 14 participants were purposely selected based on their nationalities. The participants were from 11 countries; Ghana, Zimbabwe,

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United States of America, Kenya, Mali, Congo, Côte d'Ivoire, Nigeria, Lesotho, Ivory Coast, Benin.

Summary of findings and implications

1. 100% of the research participants believe that with an early tech background education and mentorship, more women will be able to join the tech sector. This will help in developing their tech skills, empowering females in tech, creating self-awareness among women in tech, encouragement of females to join tech and it will finally change the mindset of females who think tech is hard. This finding is in line with McKenzie & Woodruff (2014) research that emphasises that mentorship and training encourage women participation in entrepreneurship, help mitigate some entrepreneurial failures and increase the survival rate of businesses.
2. Also, from the interview data, 100% of the research participants believe that there are a lot of assumptions and expectations surrounding the tech sector and women joining the tech sector. Some of the assumptions surrounding tech are stereotypes that tech is hard, and the other assumptions are on women entrepreneurs in tech. For example, societal expectations of the women to stay at home and take care of the children instead of furthering their education or career. Once these societal expectations are eliminated, more women entrepreneurs will be able to join the tech sector.
3. The EITs believe resources like training, funding, networks among others should be made available to encourage and increase women participation in tech entrepreneurship. The research participants attributed their entrepreneurial development at MEST to resources like class works and assignments, which include pitches, debates, group works. The EITs are also

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motivated by the funding given to the teams that pitch well their final capstone. Furthermore, the EITs believe that curiosity, resilience and hard work has made them successful in the tech sector. Moreover, there are no distinctive personality traits among the EITs. This shows that when given the resources, female entrepreneurs can thrive in the tech sector.

4. 14.3% (2 female participants) had directly faced gender challenges in the tech sector outside of MEST incubator. On the other hand, 7.1% (1 male participant) had directly faced a gender challenge in the tech sector, also outside MEST. However, 50% (7 participants) had not directly faced any gender barriers, but they had heard of the challenges that women entrepreneurs face in the tech sector. Finally, none of the research participants had experienced any gender challenges at MEST incubator. This incubator treats both genders as the same and all the resources provided are gender neutral. This implies that incubators are helping in reducing gender barriers in tech entrepreneurship.

Policy, industry and practice recommendations

The conclusions of this study have shown that early tech background education and mentorship, elimination of societal expectation and provision of adequate resources to women entrepreneurs would encourage them to join the tech sector. This study has also shown the usefulness of incubators in promoting and nurturing women entrepreneurs. Thus, below are the recommendations to policymakers, investors, governments and incubator heads.

1. Setting up more Incubators. Data from this research has shown the benefits of incubators in promoting female entrepreneurship. Incubators narrow the gender gap in venture financing as funds are given to entrepreneurs

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irrespective of their gender. Hence, the government should consider setting up more incubators to mentor female entrepreneurs.

2. Mentorship of girls who show interest in tech entrepreneurship at an early age.

More Programs that train and encourage girls to enter tech entrepreneurship should be established. Also, policymakers in schools should create a friendly environment for girls in schools to thrive in scientific fields at an early age.

Limitations and recommendations for further study

The researcher used a single case study which provided a more in-depth perspective of the phenomenon under study; however, there was over-generalisation. Hence need for further study, the researcher recommends engaging more than one tech incubator in Accra to get a more comprehensive representation of the gender barriers that women entrepreneurs face in the tech sector. Furthermore, the researcher used a single data collection method while collecting primary data hence limiting the insights gained from the phenomenon under study. For further research, the authors can use multiple data collection methods like focus groups, surveys, questionnaires, among others. Finally, the COVID19 pandemic affected the research as the researcher left the country of study due to increasing numbers of COVID19 cases in the country used in the study. This limited some in-person interviews.

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Appendix

EITs Interview

Introductory message

Thank you for volunteering to participate today. Participation in this research will help in understanding the gender barriers that female entrepreneurs face in the tech sector in Greater Accra. We appreciate honest and critical answers. There are no right or wrong answers to any of these questions.

1.1. Interview Objectives & Research Questions

1. How easy or difficult was it for you to join the tech sector and MEST?
2. What do you like about this MEST?
3. What has been your experience working under MEST so far?
4. What skills and knowledge have you acquired or hope to acquire in future from MEST?
5. How has your business or project changed ever since you joined this MEST in case you have any?
6. Describe your interactions with the activities at MEST
7. Does MEST have any resources available to a specific gender?
8. What other resources would you like to utilize from MEST? Why?
9. Have you faced any gender-based challenges you have faced working under MEST?
10. What do you think prevents female entrepreneurs from thriving faster compared to their male counterparts?
11. What have been some gender-based challenges you have faced in the technology sector / MEST? /in the tech sector?

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12. What do you think prevents female entrepreneurs from thriving faster compared to their male counterparts?
13. How do you measure the success of your project?
14. How are your interactions with people outside in the incubator in both in the technological sector and non-technological?
15. Things to do for girls to be more in the tech sector
16. Did you have a tech background before joining MEST? What was it in?
17. What were your expectations before joining MEST and have those expectations been met?

1.2. Facilitators at MEST incubator Interview

Introductory message

Thank you for volunteering to participate today. Participation in this research will help in understanding the gender barriers that female entrepreneurs face in the tech sector in Greater Accra. We appreciate honest and critical answers. There are no right or wrong answers to any of these questions.

Interview Questions

1. What motivated you to join MEST?
2. How many participants are in this incubator?
3. What is the gender composition of this incubator?
4. What are some of the criteria you consider while choosing participants?
5. What do measure do you use to consider gender neutrality while recruiting participants in this incubator
6. Do you have any specific pieces of training or resources geared to women entrepreneurs?
7. What is the performance of female-owned businesses in this incubator?