

# IMPACTS OF INTERNET ACCESSIBILITY AND COST ON SMEs IN GHANA

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The goal of the research was to investigate the extent to which the accessibility of internet impact small and medium sized enterprises (SMEs) in Ghana. The motivation for the research was driven by researcher's role in the case company and a personal interest in doing business in Ghana, especially in the digitally transformed world.

The theoretical framework of the study was internet accessibility across Ghana and Africa at large as well as the cost of internet services. A literature of small and medium sized enterprises was also overviewed, especially in the context of sub-Saharan Africa and with focus on Ghana. Another vital theory in this thesis was the concept of digital business.

The case company for this research was Achiinks Consult. The company has been in existence since 2010 and has provided services of visa assistance, holiday packages and study abroad opportunities. It expanded into other business sectors such as driving school and rentals.

The main method used in the empirical part of the research was quantitative method. In the empirical study, an online questionnaire survey was used to collect data from the respondents. The respondents were owners and managers of small and medium sized enterprises. The data was electronically analysed and presented in the findings.

The results of the study validated the theory that entrepreneurs in Ghana are gradually catching up with the digital evolution of the world. The use of internet helped in the advertisements and communications between businesses and their customers. Nevertheless, they faced challenges in accessing a quality internet at an expensive price. To make an accessible and cheaper internet service for SMEs in Ghana, it is a shared responsibility of the government and the mobile service providers. Once there is an improvement in the accessibility of internet for SMEs, the result would be increased in turnover.

**Keywords** accessibility, small and medium sized enterprise, digital business, entrepreneurship

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## FOREWORD

I would like to express my sincere gratitude to my supervisor, Anthony Ekuogume for his timely advice and guidance throughout the process of conducting this research. And generally, to the staff of Lapland University of Applied Sciences, especially to the teachers of the Digital Business Management group. A special mention to Teresa Chen for her advises on the academic layout and structure of this thesis.

Also, to Achilinks Consult, for the opportunity to be used a as a case company. To the staff of Achilinks and all my friends in Ghana who assisted in sharing the survey link and followed it up, I say thank you.

Finally, to my wife and family who supported me throughout the process.

## 1 INTRODUCTION

This chapter presents the background and motivation of the research. Additionally, the objectives as well as the research questions were presented in this chapter.

### 1.1 Background and Motivation of Research

The world has evolved rapidly with the introduction of modern technologies, which has brought about digitization in almost all aspects of human lives in recent times, most especially in the field of business. As a basic unit of digitization, the use of internet is indispensable, hence, a very powerful tool for digitization. The capability of organisations or individuals to get connected to the internet through devices such as computers, mobile phones, and others to enable access to web and application services. Accessing internet usually comes at a cost to the user and the speed of the internet is based on the individual different signal rates. (Young 2013)

In Sub-Saharan Africa, the number of mobile phone users has increased tremendously. This has a direct effect on the rise of internet users. According to Statista (2022), as of December 2021, only 40% of people living in Africa were connected to the internet. This means that, even with increasing amount of digitization in the world, the number of internet users is still lower in Africa which includes Ghana. The lower connectivity may be attributed to several different factors which this thesis project sought to investigate.

The accessibility of internet in Ghana is usually attributed to the privileged and the rich. It is sometimes an iniquity between the poor and the rich because of higher cost. This is evident in the sense that, those who are financially resourced tend to benefit than those who are not. It is also clear that those who are computer illiterates are usually excluded from the use of internet services. (Brunet, Tiemtore & Vettraino-Soulard 2014)

The case company is a travel and tourism company with expertise in assisting clients to obtain visas and work permits abroad. It also organizes domestic and international holiday trips and helps its clients to study abroad. The company has

been in existence since 2010 and has seen tremendous changes especially in the digital scope. As a travel and tourism company, the use of internet service is inevitable in the modern days. This is because, dealing with international partners mostly require digital services such as emails, Zoom, WhatsApp and other digital platforms. With its branches spread across Kumasi and Accra which are the two main economic cities of the country, the company planned to expand its offices, hence the motivation to investigate the accessibility and cost of internet in the country at large.

Personally, my motivation for this research was derived from my role as a study abroad consultant in the company and English proficiency teacher. Working in Ghana from Finland is usually done online with the help of 'Zoom'. One of the challenges I encountered during my job online was where students sometimes go offline due to poor internet connectivity. Clients also went offline for a reason, that their data bundles were exhausted. All these interrupted the interactions with the clients and in long term affected the progress of my job. I had a plan to set up my own business in Ghana and came to the realization that, competing in modern business required proper digitization. To be able to achieve this, internet accessibility and cost and how it affects small and medium sized enterprises had to be analysed.

## 1.2 Objectives of the Research

The objective of this thesis was to research the accessibility of internet by SMEs in Ghana. As the primary objective, it was the researcher's aim to investigate how easily or difficult it is to access internet on an average in a Ghanaian community. The effect of location with regards to internet connectivity and accessibility played a vital role in achieving this objective. Additionally, the thesis sought to investigate the cost involved in the use of internet by SMEs in Ghana. As many companies, most especially the case company, as well as individuals spent quite much on their various data plans and packages, it was important to explore the cost of internet connectivity in Ghana.

The overall, objective of this research was to study the extent to which the costs and accessibility of internet services affected the operational activities of the SMEs in Ghana.

### 1.3 Research Questions

The thesis had three main research questions which sought to address the objectives of investigating the level of internet accessibility and how it could be improved for a positive impact on the SMEs in Ghana.

#### 1. What is the level of internet accessibility for SMEs in Ghana?

This research question sought to answer the extent to which internet was made accessible to the average Ghanaian. There is no doubt that when the general accessibility is higher, it has a direct effect on business activities, both on the part of the business owners and the customers. It also considered how they could access the internet based on their geographical location and settlements. The accessibility might be generally higher in urban areas compared to the rural centres.

#### 2. How can the internet accessibility be improved for SMEs in Ghana?

Improving global internet accessibility is one of the main goals of the world leaders and Ghana is no exception. To develop the business sector and encourage entrepreneurship, it has become necessary that our internet and communication infrastructure must as well be improved. This would create efficiency and convenience for business operations.

#### 3. How does the cost of internet affect the activities of SMEs in Ghana?

Another important question that needs to be answered is how affordable the use of internet in Ghana is to the SMEs. After making the internet accessible to the people, it is also essential to make sure it is quite affordable. Not only the services, but also the physical equipment such as mobile phones, computers and routers must be affordable to the people.



#### 1.4 Structure of the Thesis

The study continues from chapters 2 to 5. Chapter 2 reviews the related literature. It gives the theoretical insight of what other authors have written about internet accessibility, digital business as well as small and medium sized enterprises in Ghana. In chapter 3, the research design and methodology of the study is explained. The results and findings are analyzed in chapter 4. The study ends in chapter 5 with discussions and conclusions, and recommendations for future researchers.

## 2 LITERATURE REVIEW

This chapter discusses the theoretical framework of the research. The theoretical foundations of the research were internet accessibility, SMEs, and digital business. The literature was sourced from books, e-books, articles, journals, and other online materials.

### 2.1 Brief History of the Internet

The existence and evolution of the internet date back to decades ago. With the introduction of email in the 1960s and file sharing around the 1970s, it was the invention of the 'World Wide Web' that turned the chronicles of communication around. The modern internet was adopted in January 1983 by ARPANET where researchers began to combine the "network of networks". Tim Berners-Lee, a British inventor created the 'World Wide Web' as an information sharing system through networked computers. This became well recognizable. People usually confuse themselves that the 'World Wide Web' is really the common means of accessing online data. This comes in the forms of hyperlinks and websites. In the 1990s, very few computers were actively connected to the internet. Only about half of the world's population were online at that time. (Roser, Ritchie & Ortiz-Ospina 2015)

The internet has gone through series of evolutions over time. In the last few years, the internet has been commercialized. It has become a commodity that provides services to support other commercial products and services. As the commercialization has increased, there is also a direct effect on its users across the globe. According to Statista (2023), there are about 5.16 billion internet users in the world as of January 2023. This translates into 64.4 percent of the world population.

## 2.2 Internet Accessibility

Internet accessibility is basically making internet resources and computer technologies more functional to more potential users than otherwise (Valdes 2006). The use of internet has become essential in recent years, especially to access information and other daily purposes such as communication and searching for information. Whilst internet is a service on its own, it also provides access to other services. Due to its crucial nature, it is necessary that it becomes accessible and affordable. It must also be reliable, secured and consciously available to the user. Improving the accessibility, could directly or indirectly make users benefit from all the opportunities the internet offers. (Council of Europe 2022)

Even though, there is an increasing internet accessibility across the globe in recent years, Africa has a very low internet accessibility. Due to this, the world Bank has a target of helping the continent to achieve a universal internet connectivity by end of 2030. This target seems achievable but there are a lot of obstacles to it. (Kamar 2022)

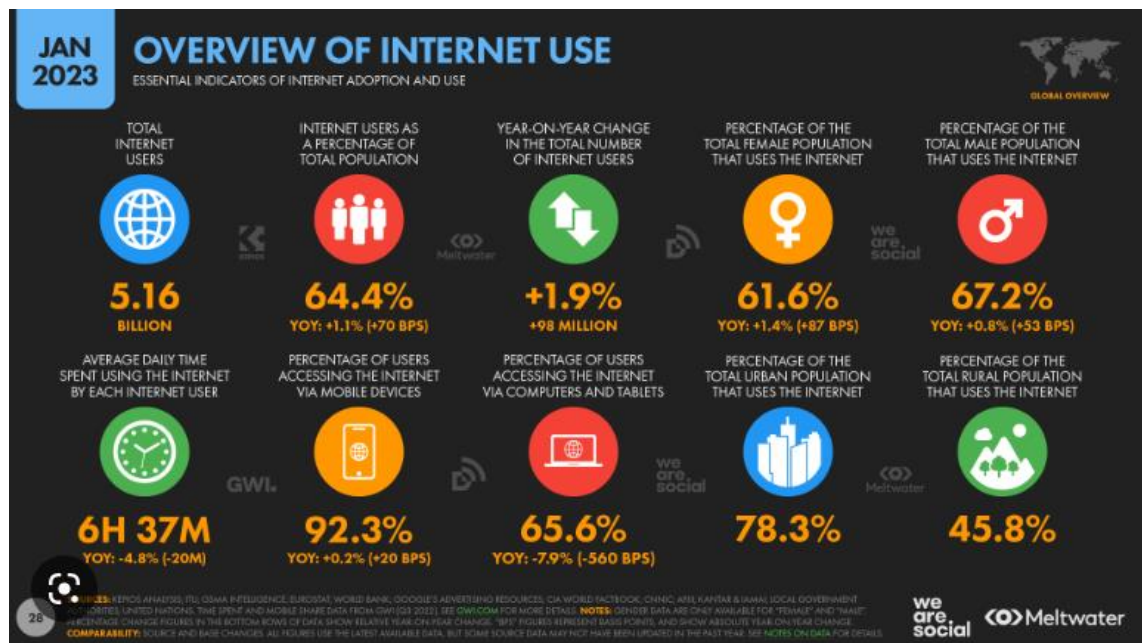


Figure 1. Overview of world internet use (DataReportal 2023)

In 1990, Ghana was amongst the first few African countries to elevate the telecommunication market. Just after two years, the internet became accessible to Ghanaians. Internet accessibility is essential because when people are deprived of internet accessibility, they are not empowered. Therefore, Ghana begun an internet acceleration development program in 2004. As part of the program, fibre optic infrastructure laying begun. (Mwakideu 2021). According to the Ghana National Communications Authority (2022), 70% of Ghanaians are mobile subscribers. As of January 2022, the number of internet users in Ghana stood at 16.99 million. Kamar (2022),

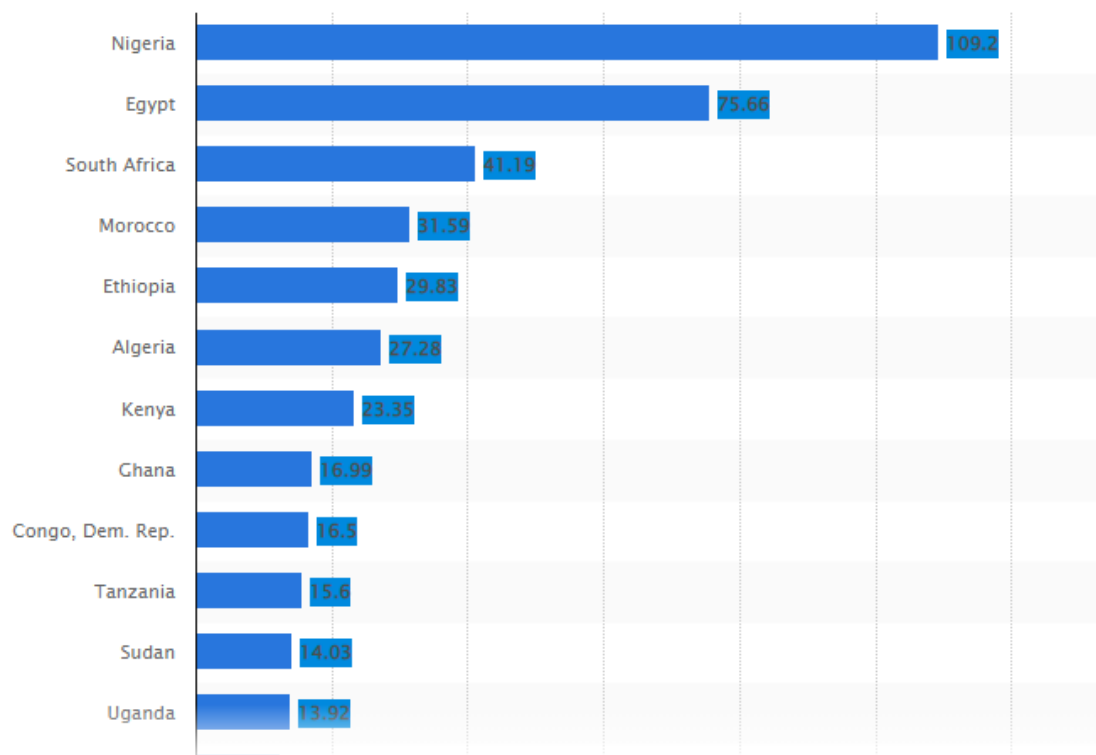


Figure 2. Number of internet users in selected countries in Africa as of January 2022, by country (in million) (Kamar 2022)

A greater benefit is obtained from application of the internet by technology-based economies. For developing countries such as Ghana, whose economy is not based on technology, it is the target of the government to identify the extent to which it will benefit from internet integration. The needed improvements need to be assessed. One of the areas that could be identified is the cost of setting up the internet. If the cost could be kept down, there could be a higher possibility of

achieving a greater result. To stimulate the optimal use of the internet at all levels requires a progressive technique in its adoption. (Brunet, et al 2014, 75)

Most Ghanaians believe that the internet exhibits a gap between the literate and illiterate or the poor and the rich. Just like any other technology, the internet needs time, and resources to be accessed. The use of the internet demands a basic knowledge of mobile phone and computing skills, but this is usually lacking by majority of the population. Poor infrastructure and high cost of resources are hinderances to the development of the internet and mass accessibility. The average cost of a computer set in Ghana is 800 Ghana Cedis which is very expensive to the average Ghanaian.

The telecommunications policy was designed in 1995 to define the strategies aimed at improving infrastructure and services in the telecommunication industry. Through this policy, the commercialization of the internet services accelerated. Until 1995, the management of the telecommunication services was a monopoly by the government. Today, the competition is widely opened amongst many service providers as the private sector takes the principal role in the technology industry. The goal of the policy is to give total control and management of the sector to the private sector whilst government withdraws gradually. Seven main internet services providers are listed in Ghana by the National Communications Authority (2022). These are Mobile Telecommunication Network (MTN), Vodafone Ghana, Airtel Tigo, Surfline, Busy 4G and iBust, Teleda ICT. The most popular of them are MTN, Vodafone and AirtelTigo who provide both mobile and internet data subscription services to their customers. These providers usually provide internet data at very expensive rate with limited amount of data within an expiration time frame.

The government of Ghana seeks to encourage business creation, through the pursuit of entrepreneurship. This calls for support to develop the internet in the country. As a way developing and making it more accessible to the Ghanaians, the cost of internet equipment and services must be made affordable to the users. All the players, either government or private should make it a point to contribute to the target of making internet accessible and affordable to everyone. (Brunet, et al 2014, 81)

According to Oluwole (2022), The general cost of data in sub-Saharan Africa is one of the most expensive in the world (second in the world). He further mentioned that there are just 5 countries from the region amongst the top 50 countries with the cheapest internet data in the world. As of August 2022, Ghana was the sub-Saharan country with the cheapest cost on internet. The cost of 1-Gigabit broadband internet data in Ghana is 0.60 Euros (equivalent to 8 Ghana Cedis). On the other hand, the same amount of data could be sold as higher as 13, 16, and 29 Euros in Seychelles, Togo, and Sao Tome respectively. The speed of the internet does not necessarily have a direct relationship with the cost of the internet broadband data. This means that, the cost of the data plan does not impact its speed. Oluwole (2022), continues to mention that the countries that have better internet infrastructure such as 4G and 5G offer a relatively cheaper internet data package. In comparison, there is a larger reliance on mobile data in countries with no fixed-line broadband. It can also be mentioned that the higher number of service providers coupled with a healthy competition may result in a cheaper data plan.

The prices of mobile devices on the other hand, has a tremendous impact on the cost of internet usage. According to Alliance for Affordable Internet (2022), even though smart phones are one of the least expensive of all internet devices in the world, just a few from the sub-Saharan Africa can afford. Smart phones serve as an essential meaningful connectivity device. It is one of the essential devices needed to develop a digital economy. They are therefore valuable tools when it comes to ensuring improved accessibility. Most people around the world, especially the youth tend to use their smart phones to search for jobs online, take online classes, and more often buy something online.

As a tool for enabling digital participation, smartphones remain unaffordable to underdeveloped and developing countries. It costs more than 30% of the monthly salaries of people around the world to be able to purchase a smart phone. Owning a smartphone is still costly even though their general prices was reduced between 2021 and 2022. Most affected when it comes to the cost of owning a smartphone are women and people living in the rural areas. With the general decrease in prices globally, it is interesting to know that the prices of smart phones increased

by over 20% in Ghana between 2021 and 2022 due to a higher rise in inflation (Alliance for Affordable Internet 2022).

Various governments around the world have set out action plans to improve smartphone affordability, but the problem remains in least developed countries. Innovative ways of financing and closing the gap of smartphone ownership must be well adopted. The impact of smartphone ownership on an all-inclusive digital economy should not be underestimated. Once many people are connected through their smartphones, digital business would be highly improved. (UN 2019)

On the story of an all-inclusive digital economy in Ghana, the awareness and use of internet among women has improved in the last few years. Decades ago, women in Africa were made to believe that they could not engage in any form of competition with their male counterparts. Fast forward, in 2023, most women have overcome the negative norm and superstition around the use of information communication technology. The challenge of device gap cannot be overruled among Ghanaian women. Other than their peers, women with internet access are more confident in conducting wide range of activities such as online purchases, searching for information, education, seeking healthcare support, engaging in political activities as well as searching for jobs. It is also proven that women who are connected tend to use the internet for financial benefit. They use it for professional services like setting up mobile money and online banking (Alliance for Affordable Internet 2022).

In Ghana, women are usually entrepreneurs. They are often engaged in petty trading. Most of them these days have resorted to the use of the internet to create and market their content. With the new models and digital ways of doing business emerged in recent times, women are taking very active role in their respective businesses. Many West African women are already taking advantage of the new possibilities. (Akinyinka, Ton and Chibuike 2017, 77)

Alliance for Affordable Internet (2022) mentions that it is economically costly if the issue of digital gender inequality is unaddressed. With just about 32% of the West African sub region population connected to the internet, there is no doubt that the

sub-region holds one of the most stubborn gender gaps in the world. There are two women users of the internet for every three men that have access. Just like other parts of the world, there are several factors that keep females offline. Amongst these factors are, online privacy fears, expensive data and devices tariffs, educational attainments, and insecurity. To achieve the universal internet access target, those factors must be persistently dealt with. Until then, it will be difficult and almost impossible for these females to catch up to their male counterparts.

### 2.3 SMEs in Ghana

The definition of an SME may differ from the context of a country. This is usually measured by the number of employees and the turnovers. For example, according to the European Commission (2003), an SME is defined as the business with less than 250 employees and a turnover of less than or equal to 50 million Euros. These small and medium-sized enterprises amount to about 90% of businesses in the European Union. Gordon, Natarajan, and Arora (2019; 45) also mention that an SME in the American context is defined as a business with less than 500 employees. They further mention an SME in the context of Japan has less than 300 employees with an investment not exceeding 100 million Yen. Stanford (2023) distinguishes between a start-up and a small business. A start-up is basically a business in its first stage. Founders of start-ups usually have the intent to develop a product or service which is expected to get a demand and future growth.

In Ghana, small and medium-sized enterprises are defined with hundred (100) or less employees. This is relatively lower compared to other developed parts of the world. Businesses with more than hundred employees are considered large scale (International Trade Centre 2016). The definition of small-scale industries evolves with time and conditions. For instance, Once the country sees a greater revolution in its businesses, the number of employees and turn over criterion may change (Gordon, Natarajan, and Arora 2019; 46).



UNCDF (2021), emphasized that, the Ghanaian business is largely dominated by the informal sector. It employs about 70% of the workforce with over 90% of the market share. According to the Registrar General's Report (2021), there are 160,000 small and medium sized enterprises in Ghana. Many people tend to start businesses on their own since there is so much pressure on the few available formal sector jobs. According to the Bank of Ghana (2022), 92% of the businesses that are registered under the Registrar General are micro, small, and medium-sized enterprises. Out of these are usually sole proprietorship, small retailers, farmers, market women and artisans.

Gordon, et al (2019; 49), identify some of the importance the SMEs have on the economy of a country. They mention that the primary benefit of an SME is the creation of employment. Due to the labor-intensive nature of SMEs, they have the tendency of providing more employment per unit of capital. Small and medium enterprises generate eight (8) times employment than the larger scale counterparts. Another importance of an SME is that it makes a judicious use of the locally produced raw materials. In Ghana, there are availability of certain resources such as gold, timber, and minerals. These resources are usually transformed into semi-finished and finished goods by the small and medium scale enterprises.

Quartey (2008) also mentions that the existence of small and medium enterprises helps to create a balance in regional developments. This is because most of the large sized businesses are in the already developed urban areas. It is quite easier and possible to start a small business in rural areas which does not usually require as larger capital as the larger scale. This helps to create a wider spread of industrialization in a country or region.

Moreover, the importance of decentralization of industries was acknowledged by Gordon, et al (2019; 50). Since larger scale businesses are usually located in urban centers, people tend to migrate to these areas in search for job. This creates congestion in the urban centers causing pressure on social amenities. The pressure also creates slums, pollution, and social vices. When small and medium businesses are dispersed across the country, it would help to reduce the intensity

of such above-mentioned problems. Decentralization would also help to tap into the unidentified and untapped human and natural resources.

Furthermore, small, and medium enterprises serve as an appropriate environment for the development of entrepreneurship. They create a suitable environment which stimulates relations and growing networks among individuals in the business sector. This ensures knowledge sharing which tends to develop talents of various individuals. This is done by growing personal traits and firms together. Local entrepreneurs and start-ups also use SMEs as training grounds. Through the acquisition of skills and knowledge, experiences are transferred to other industries from smaller to larger scales (Ahmed, Zakiya, Rahman & Mohammed 2018).

In contrast, the SMEs are faced with several challenges. According to Quartey (2018; 37-55), even though many Ghanaians are doing well to establish and sustain their businesses, the issues of finance in the developing country and unfavorable policies have been mostly the challenges they face. The Bank of Ghana (2022) explains that SMEs in Ghana are usually unable to formalize their operations in terms of proper bookkeeping and documentation. This therefore makes it difficult to assess financial support and credit facilities from financial institutions. A few of them that can do so may also be required to produce a huge collateral.

Besides the lack of credit facilities, the Bank of Ghana (2022) further mentions that these small and medium sized enterprises have very limited access to technological tools and equipment. SMEs as the name implies, are usually small in nature and sometimes located in rural and deprived areas. This makes the accessibility of technology such as the internet and quality services difficult. Even when this technological equipment is available these business owners are unable to afford them due to their higher costs.

In all parts of the world, history has proven that entrepreneurs play central roles in economic development. Aside a few countries that depend largely on mineral resources, it requires a strong, competitive, and innovative entrepreneurship to strengthen the bedrock of many countries' economy. It was based on this history

that the World Bank in 1989 made a declaration that the central roles of African economies would be taken by entrepreneurs. (Akinyoade, et al 2017)

According to Akinyoade, et al (2017), Entrepreneurship is basically occurring when an individual or a group of individuals come together to establish a new business. Usually, individuals coming together share a common goal for a better compatibility. One of the key factors in the competitive world of business is innovation. Being innovative makes entrepreneurs stand out and go beyond just the customers' needs. According to Stanford (2023), entrepreneurship in the U.S. is mostly dominated by food and restaurant operations and retailers.

Africa needs industrialization to be able to compete with the advanced world. This process of industrialization could happen through the establishment of private companies. In Ghana, entrepreneurship is often defined and seen as those who have been successful, wealthy, and famous in establishing, organizing, and directing a business. The story of risk-taking, pursuit and problem management is often overlooked when defining the whole entrepreneurship process. (Fick 2002).

The success of entrepreneurship is not always guaranteed by a smart venture or right opportunity. There are several hurdles on the road that entrepreneurs need to overcome before getting successful. One undisputed hurdle to overcome is the acquisition of funds. Another blow to deal with, is finding a proper mentorship (Stanford 2023). In Ghana there is over-reliance on government sector jobs. According to the Bank of Ghana (2023), government payroll is full and unable to employ into the government sectors. This has made it quite challenging for many graduates to find a formal job after graduation. Even though it seems negative when graduates are unable to find jobs, it sometimes turns out positive when those unemployed graduates can start their own micro businesses. Some of these micro businesses grow to become small or medium-sized enterprises.

## 2.4 Digital Business

After the introduction and increasing evolution of the internet, many activities, including ways of doing business have sharply taken a digital shape. Many companies have shifted from the traditional ways of doing business to digital (online). There are numerous benefits derived from going digital to both customers and business managers (Kreutzer 2018, 11). People spend more money online today, which has channeled the emphasis on generating revenue to the digital scope. Scott (2022) mentions that the evolution of digital business goes beyond just selling online. According to Lee (2023) digital business is the innovative way creating value and ability to create opportunities that the traditional markets may not be able to offer.

The internet helps to reduce the search cost on customers. These days, customers can search and compare wide range of products and services on the internet at the comfort of their homes at a faster pace. Prospective customers could also find businesses online on their own without having to make a physical contact. Similarly, companies also have possibilities to reaching out to as many customers as possible through online platforms, most especially on social media (Scott 2022). Another prospect of the use of the internet by businesses is the ability to connect and personalize marketing data. According to Chaffy & Ellis-Chadwick (2019), transacting on the internet gives room for companies to obtain personal data from its customers such as gender, age, interests, and status. That information obtained from the customers help companies to target personal ads and marketing offers to the right customers.

Adeola Hinso & Edeh (2022) state that, there are tremendous opportunities for digital business offered by the African market. This would be defined by a shift from the traditional ways of open and physical marketing. They mentioned that the African market is still underserved despite many businesses and start-ups taking advantage of the emerging digital opportunities. Digital business in Africa must not necessarily follow the global trend, but it must analyze and understand the unique needs of the typical African market.

Social media has been one of the influential platforms used to market products and services today. Most people, especially the youth spend much time on the internet (social media to be precise). Hence, many marketers have resulted to reaching their potential customers through social media. Most popular, Facebook, Instagram and Twitter have all proven to be successful in modern ways of doing business (Krasniak, Zimmerman & Ng 2021).

Many different marketers adopt different strategies to market their products and services on social media. But all those strategies must be geared towards value creation and customer satisfaction. Apart from meeting the needs of your customers, another way to satisfy them in recent times is being easily reachable. Modern customers wouldn't want to spend much time and stress in shopping. They would therefore like to search, compare, order, and pay online and in the end prefer a home delivery. Being able to do all these conveniently also helps to bridge the customer journey gap. (Law 2022, 23)

In digital business, managers tend to use existing technological tools to cut cost. These tools are also used to collect data to provide a better customer experience. The focus is mainly on the competitive advantage gained by technology. It assesses and capitalize on whether it is reducing damage or value creation. Another element that needs to be embraced in today's business is digital transformation. The concept of digital transformation emphasizes strategies that enterprises need to adopt to transform their businesses in the digital scope. New models that put the customer at the center must be explored. When exceptional customer experience is offered, customers are willing to spend more. (Adeola, et al (2022)

### 3 RESEARCH DESIGN

The methodology for this research was quantitative. The use of this method enabled the researcher to gain adequate, reliable, and valid data needed to carry out the research.

#### 3.1 Quantitative Research

Quantitative research approach is basically linked with numerical data collection and analysis. The numerical data is usually used to make generalisations based on patterns, relationships, and averages. There must be a careful look and consideration of variables and data before conclusions could be drawn. The use of this approach is advantageous because the study could be repeated due to the standardised data collection as well as its abstract concepts being tangibly defined (Martin & Bridgmon 2020). Mun (2017) mentions that the results of a quantitative study can be compared directly regardless of the location, setting, and group. One can statistically compare the results. There is the possibility to process and analyse larger samples by using reliable and consistent procedures.

According to Yin (2019; 78-79), the focus of a quantitative research is usually on causes and effects. This is because the statistical data is analysed at the end of the study. To be able to make conclusions from a quantitative data, the results must be wide enough. The variables that must be considered are the respondents' position in an organization, the area of operation by the organization, the size, and the localization of the organization.

Although, quantitative research approach has numerous benefits, it is sometimes deficient in defining complex research problems. Complex issues like emotions and feelings cannot be well explained and presented. For example, it is quite weird to use numbers to represent concepts about mood. (Estban-Bravo & Vida-Sanz 2021). This could be well explained by a qualitative approach. Sometimes, other relevant observations and ideas could be ignored due to a predetermined measurement procedure and variables. Also, there is lack of context in quantitative research, thus, the use of unnatural settings such as laboratories may affect

the result of the data collection. Also, historical, and contextual concepts are not addressed. (Wrench, Thomas-Maddox, & Richmond 2018)

### 3.2 Questionnaire & Survey

The main data collection instrument for the research part was questionnaires (online survey). It was made up of a set of questions that are usually aimed at gathering information from its respondents. According to Martin (2020, 128), a proper research questionnaire is made of both close-ended and open - ended questions. Close ended questions consist of questions with given options to choose from whereas open ended questions are in a form of long form questions which gives respondents the ability to explain their thoughts.

In conducting a postal survey, questionnaires are one of the useful options you may adopt. The use of survey is cost-effective, and its analysis is faster and easier compared to other methods such as interviews. Since there is not personal contact between the researcher and the respondents in surveys, the language and layout of the questions must be simple and easy to follow. Alternatively, traditional paper questionnaires may be handed to the respondents to fill out. In many cases, questionnaires may be designed entirely by the researcher based on the research objectives or a researcher can adopt an already existing one. These days, there are quite many pre-existing questions covering different areas of research. (Mun 2017, 261)

A survey usually consists of a questionnaire even though a questionnaire may not necessarily be delivered in a form of a survey. The use of questionnaires is essential when there is limited time. Basically, surveys are considered as one of the traditional ways of conducting research. It has proven to be an essential method of proving a notion. For example, in trying to prove a pre-conceived idea or an already existing notion, surveys are one of the best ways to adopt. Even though surveys can be administered to the entire population, a portion of the population is normally sampled out. When the entire population is used, it is known as a census. (Mun 2017, 297)

A survey can either take a form of cross-sectional or longitudinal. When a survey is carried out at just a point in time, its design is called a cross-sectional. Cross-sectional surveys take just a view of the happenings in a particular group at a given time. To describe or explain behaviour and attitudes, they normally take a descriptive form. For example, a work satisfaction survey normally comes in a form of descriptive cross-sectional. On the other hand, a longitudinal survey instead of just taking a snapshot, gives a clear picture of occurrences over a time. This could take quite a longer period, probably months or years. (Yin 2019).

Estban-Bravo & Vidal-Sanz (2021) mention that, the validity of a survey can be authenticated both internally and externally. When the sampling technique of a survey is random, it produces an ideal sample that represents the population under study. This will produce a result that could be generalised into the entire population. The efficiency of a survey on the other hand cannot be underestimated. Since a smaller sample is usually used in gathering data for surveys, the findings can always be used to draw conclusions.

The geographical mobility of a survey is another advantage is having over other methods. Surveys can be spread across different geographical locations. Thanks to technology, it is easier to distribute surveys digitally. Also, a survey is one of the most flexible methods used in conducting research. To produce a richer data, surveys can be used together with other methods such interviews and observations. (Mun 2017)

Wrench, et al (2018, 224-230), argue that surveys are highly dependent on the selected few (sample). The accuracy of a survey depends largely on the responses from the sample which may not be representing the majority. It is sometimes difficult to even identify an updated sampling frame. They continue that, surveys are very limited in explaining why people think or behave the way they do. Surveys are good at answering what, when and how but unable to dive deeper into answer the question 'why'.



Since this research was partly based on empirical data, an online survey was created with 23 questions including both closed-ended and open-ended questions. A link to the survey was spread to the respondents across all the regions in Ghana to get a broader perspective of how the small and medium sized business are affected by the accessibility and cost of internet.

### 3.2.1 Closed-ended questions

In close ended questionnaire, the questions have restricted answers where respondents have given options to choose from. It is usually useful for collecting data for quantitative research since it involves variables. For example, in finding out the gender or race of a target group, it is very important to cover all possible answers that are mutually inclusive so that respondents find their respective options. (Ratten 2023)

A well designed closed-ended questions are very easy to understand and answer. However, it is very likely to miss some important information that may be required from the respondents. When the answers are not well defined, individuals are forced to choose the next available correct answer which may not be the real situation. (Ratten 2023)

### 3.2.2 Open-ended questions

As the name suggests, these are questions that are open and gives room for the respondents to express answers in their own words without restrictions (Schindler 2021). Questions are usually answered in ways that researchers may not even expect. This is because there are no restricted alternatives where they must choose from. An example of an open-ended question is, 'How do you feel about the Finnish weather?'. Unlike close-ended, it requires a bit more time and effort to answer. Researchers any also need much time and resources to understand and summarize the results. When designing open-ended questions, adopt a very clear language in order not to mislead respondents. (Ratten 2023)

### 3.3 Study Population and Sampling

The population is an indispensable component of a research study. It validates the research work. The population is defined as the whole group on which a researcher intends to draw a conclusion. On the other hand, selecting specific group out of the whole population to be able to collect data is called sampling. In simple terms, a sample is the selected few that is normally less than the population. A population in research is not always about people. Sample could be elements, objects, countries, organizations, species, etc. sampling is an appropriate technique when your study population is large and widely scattered. Researchers usually make test hypothesis or estimates about population data through sample. (Martin & Bridgmon 2020)

Sampling is a necessity because it is almost impossible to investigate a large group because of its huge size. Sampling is used because it is easier to collect data from a smaller portion of a population. Gathering data from a sample is very convenient and easier. Another advantage of sampling is that it is economical. Since it only involves just a few participants and resources, it is cheaper to use. Again, it is easy to manage a sample out of a larger population. Due to its smaller size, analysing and storing data of smaller numbers is reliable and easier. (Sachdeva 2019)

In conducting a survey, it is almost impossible to access the entire population, however, then the sample is carefully selected, the results tend to reflect a close outcome of the population. Therefore, the sampling method is an essential part of a research process. As a researcher, you can be very confident with the outcome of your research if the appropriate sampling technique is used. On the other hand, if your sample selection is biased towards a specific direction, it would not be recommended to generalize the findings. Basically, there are two main types of sampling techniques: namely, probability (random) and non-probability sampling. (Schindler 2021)

In Probability or random sampling all members of the population have a known chance of being selected for the sample. It does not rely on any previous activity

or event. The choice of individuals for a probability sample may not in any way affect the chance of anyone else in the population from being selected. Probability sampling comes in four main forms. They are simple random, systematic, stratified and cluster. Many researchers believe that the simple random sampling is the ideal choice because every individual has an equal chance of being chosen (Sachdeva 2019). Non-probability sampling technique on the other hand is attributed to biasness in its operations. This makes it less desirable to use by many. Even though, its biased, it is sometimes unavoidable. For example, the quota sampling can be used in market research context. This requires a proper definition of the selected sub-groups. (Schindler 2021)

According to Sachdeva (2019), a correct sample size is determined by variables such as the population size, margin of error, confidence level, and standard deviation. A secured standard deviation choice of 0.5 helps to make sure that the sample size is larger enough to make generalisation. Those factors of how higher the accuracy and confidence you wish for your findings as well as the budget you have available determine the sample size. Ideally, all the variables must be as high as possible to get better findings. For example, the higher your confidence or accuracy (or both) automatically requires a larger sample size which in turns increases the budget.

An online survey in a form of questionnaire was used to gather data for this research. In this research, the aim was to investigate the impact of internet accessibility and cost on SMEs in Ghana. At the time of the research, there were a total number of 160,000 SMEs (study population), a sample number of 188 were used for the study. The 188 respondents were needed across all the regions in Ghana. A sample size of 188 out of the total 160,000 population was fair to make generalisation.

The sample size is calculated based on the following variables;

Confidence level 90% (Z-score =1.645)

Population size 160000

Margin of error 6%

Standard deviation 0.5

$$\begin{aligned}\text{Sample size} &= (Z\text{-score})^2 * \text{StdDev} * (1\text{-StdDev})/(\text{margin of error})^2 \\ &= (1.645)^2 * .5(.5)/(.06)^2 \\ &= 188\end{aligned}$$

Therefore, a minimum number of 188 respondents are needed to answer the survey.

### 3.4 Reliability and Validity

Reliability in research work depicts how consistent the results and findings are. This means that the research work can be replicated given the same condition. For example, a scale must be able to measure the accurate weight of an object regardless of its geographical location and weather condition. It must be able to produce the same results. In research, the concept of reliability largely depends on three main elements, internal reliability, stability, and inter-observer consistency. (Bryan & Bell 2017, 160-163)

A research study must be reliable at different points in time which means that research conducted this year may produce the same results if repeated next year. Reliability is one of the keyways in determining the quality of a research work. The credibility of a research is proven if it is reliable both across time and sample. Trust is built when reliability is achieved. (Ramsay & Silverman 2013)

Shop, Abraham & Adams (2016) mention that, one of the main standards of a reliable research is conformability. In the reconstruction of a project, the credit must be shown. The dependability of the research must be proven through the transparency and consistency of data collection. Yin (2019) ascertains that, the

reliability of a research work is targeted towards the removal of error and biasness. Another way to assess the quality of a research work is validity. Validity measures the intent of the research work. A valid study means that it is very accurate. The validity of a project is fulfilled when it can identify what it was intended to. In other words, the question of whether the findings are a true reflection of its reality. (Martin & Bridgmon 2020). According to Yin (2019, 43) the quality of a research work is purely determined by its validity and credibility. To ensure the validity of a research, the chain of evidence must always be sustained. The method must be easy to follow by the reader.

According to Ghauri & Gronhaug (2020, 73), the findings of research could be externally related. In other words, when research is valid, its findings can be generalised across different settings and persons of time and place. Aside the validity and reliability of a research, it must also be replicable in the sense that, the reporting must be available and easy to reproduce especially for future researchers on the same or similar topic.

## 4 SURVEY RESULTS, FINDINGS AND ANALYSIS

The survey was created and conducted through the 'Webropol' platform of Lapland UAS website. It was in a form of an online questionnaire. Various questions that sought to find answers to the research questions were asked. In all, 23 questions were addressed to the respondents. 15 of them were closed questions and 8 were open-ended. Based on the objectives of this research, the researcher had chosen the necessary questions to be answered in the questionnaire.

The questions included the basic information about the respondents such as, age and gender, in addition, they were asked about their business ownership types, business types as well as number of employees. The respondents were also asked whether they used internet services in their businesses. With regards to internet accessibility, another great question was the location of the businesses, the challenges and cost involved in accessing the internet. The respondents were also asked to make suggestions for ways to improve the internet accessibility to the benefit of SMEs.

In the introduction to the questionnaire, the respondents were informed and assured about the intention of the questionnaire: "This survey is intended to measure the extent at which the accessibility and cost of internet affect SMEs in Ghana. The responses provided would strictly be used ONLY for the purpose of this research and nothing else. Please answer each question as honest and accurate as possible."

### 4.1 Analysis

The analysis of the results was done with graphs. Since it was an online survey, the results were automatically generated and analyzed in a form of graph in the distribution of numbers and percentages as the responses were received.

## 4.2 Results

While gathering data for the study, the survey link was active for a period of 12 weeks to give room for as many respondents as possible to answer the questionnaire. Even though the required number of respondents was 188, 202 responses were received at the end of the survey. This increased the confidence level of the study results.

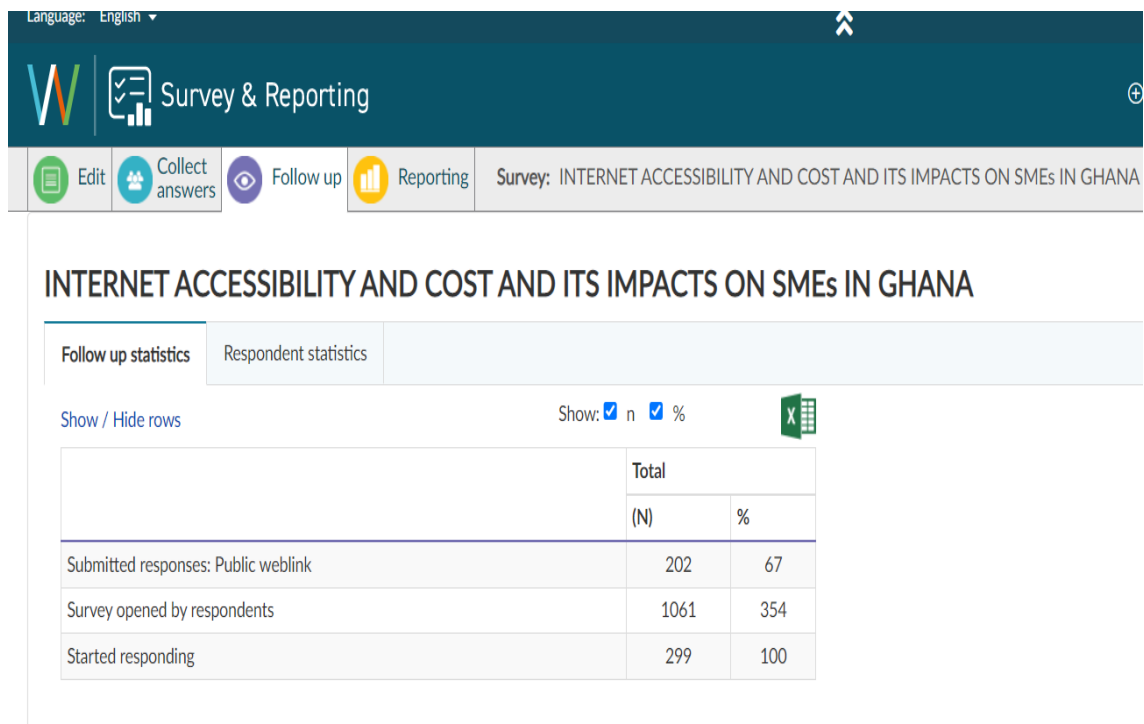


Figure 3. Follow-up of the survey

### 4.2.1 Gender

After the survey, it was recorded that, 64% of the respondents were males whereas 36% were females. It must be emphasized that, the respondents were business owners and managers. Therefore, the number of males who managed or owned small and medium sized businesses were more than their female counterparts. On the other hand, only 1 person's gender was unidentified, which represent just 0,5%.

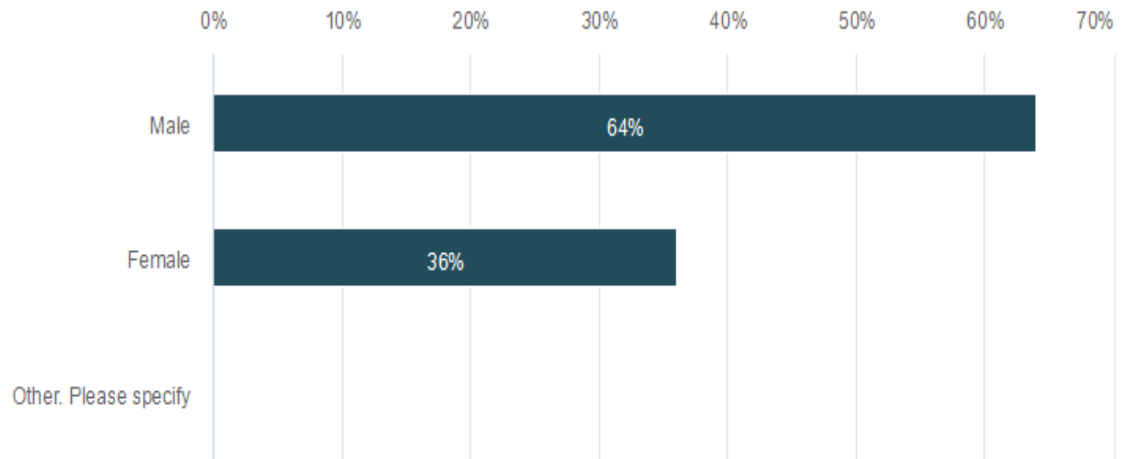


Figure 4. Gender distribution of respondents

#### 4.2.2 Age

Another vital element of the survey was the age of the respondents. According to the responses, 76 people representing 37.6% were aged between 18 – 30. The larger number of 98 respondents which also represented 48.5% was between the ages of 31 – 40. With regards to the ages between 41 – 50, there were 14 people which represented 6.9% of the respondents. 9 people which was 4.5% were in the ages between 51 – 60. As fewer as 5 respondents corresponding to 2.5% of were over 60 years old.

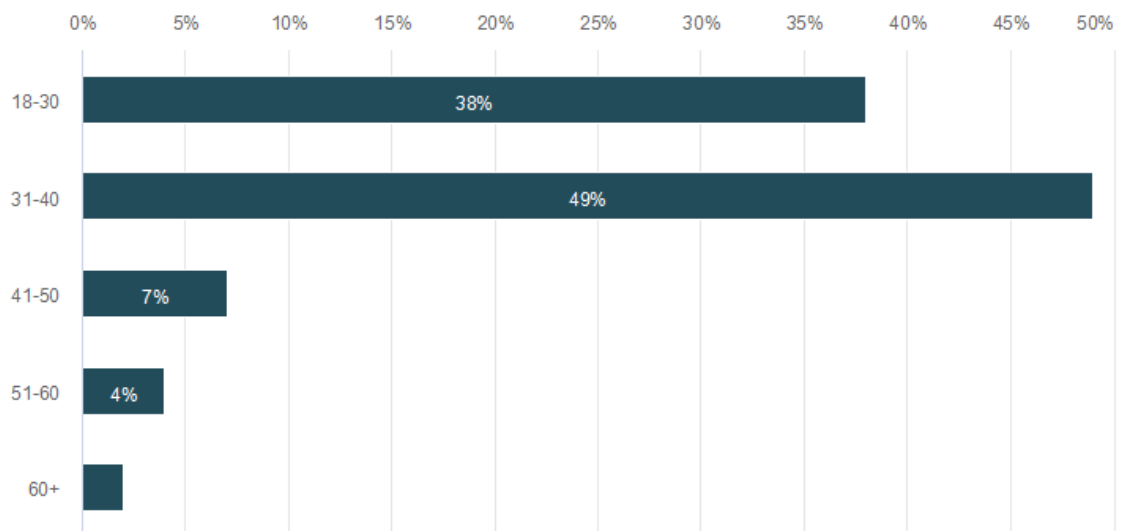


Figure 5. Age distribution of the respondents



#### 4.2.3 Business ownership type

When it comes to the type of business ownership, there were three main answers that were expected from the respondents. These were sole proprietorship, partnership, and corporation. After the survey, it was recorded that as high as 156 respondents, representing 77.2% were sole owners of the businesses. 26 respondents also representing 12.9% were into partnerships. Again, 11 respondents, representing 5.4% had a corporate business. On the other hand, 9 respondents, corresponding to 4.5% stated none of the above mentioned. Some of them further mentioned that they run NGOs which could not be classified under any of the above categories.

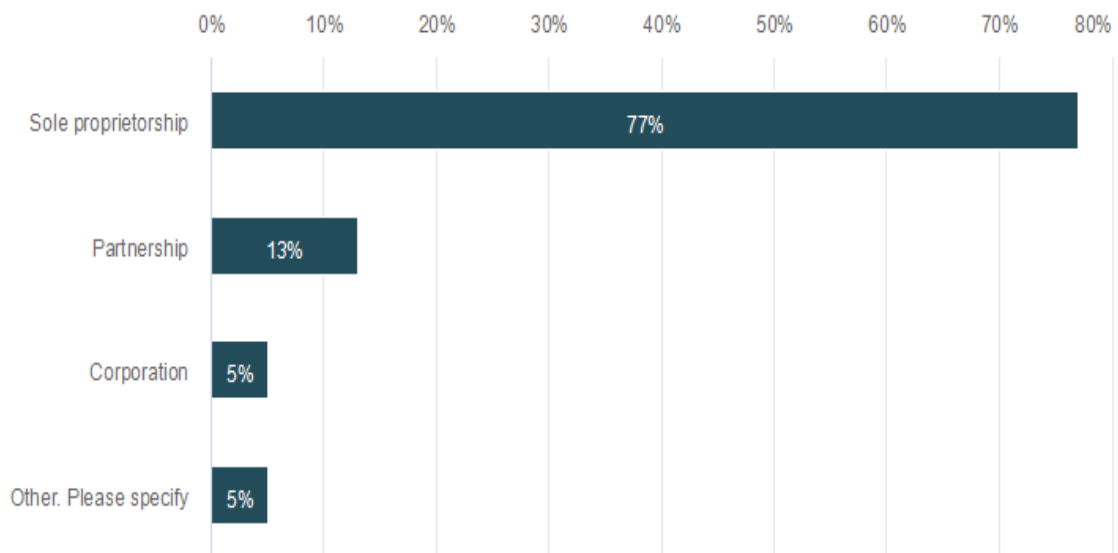


Figure 6. Business ownership type

#### 4.2.4 Business operation type

In the survey, the respondents were asked about the type of business they operated. The options were mainly categorized under food and agriculture, transportation, tourism, education, entertainment, clothing and textiles, beauty and cosmetic, finance, event planning, general merchandise, hospitality, wood, and furniture, building and construction.

According to the results of the survey, 35 respondents representing 17.3% were engaged in food and agriculture. 17 respondents, also representing 8.4% engaged in transport and tourism business. Education recorded 15.3%, with 31 respondents. Then, clothing and textiles had 24 respondents, representing 11.9%. With 16 respondents also representing 7.9% represented beauty and cosmetic. Finance and event planning had a combined total of 11 respondents which were expressed as 5.5%. 29 respondents, representing 14.3% belonged to general merchants. Hospitality and accommodation recorded 3 respondents which was 1.5%. Wood, furniture, building, and construction obtained 10 respondents which represented 6.5%. Other businesses such as health, consultancy, security, and stationery also recorded 22 respondents which represented 11.4%

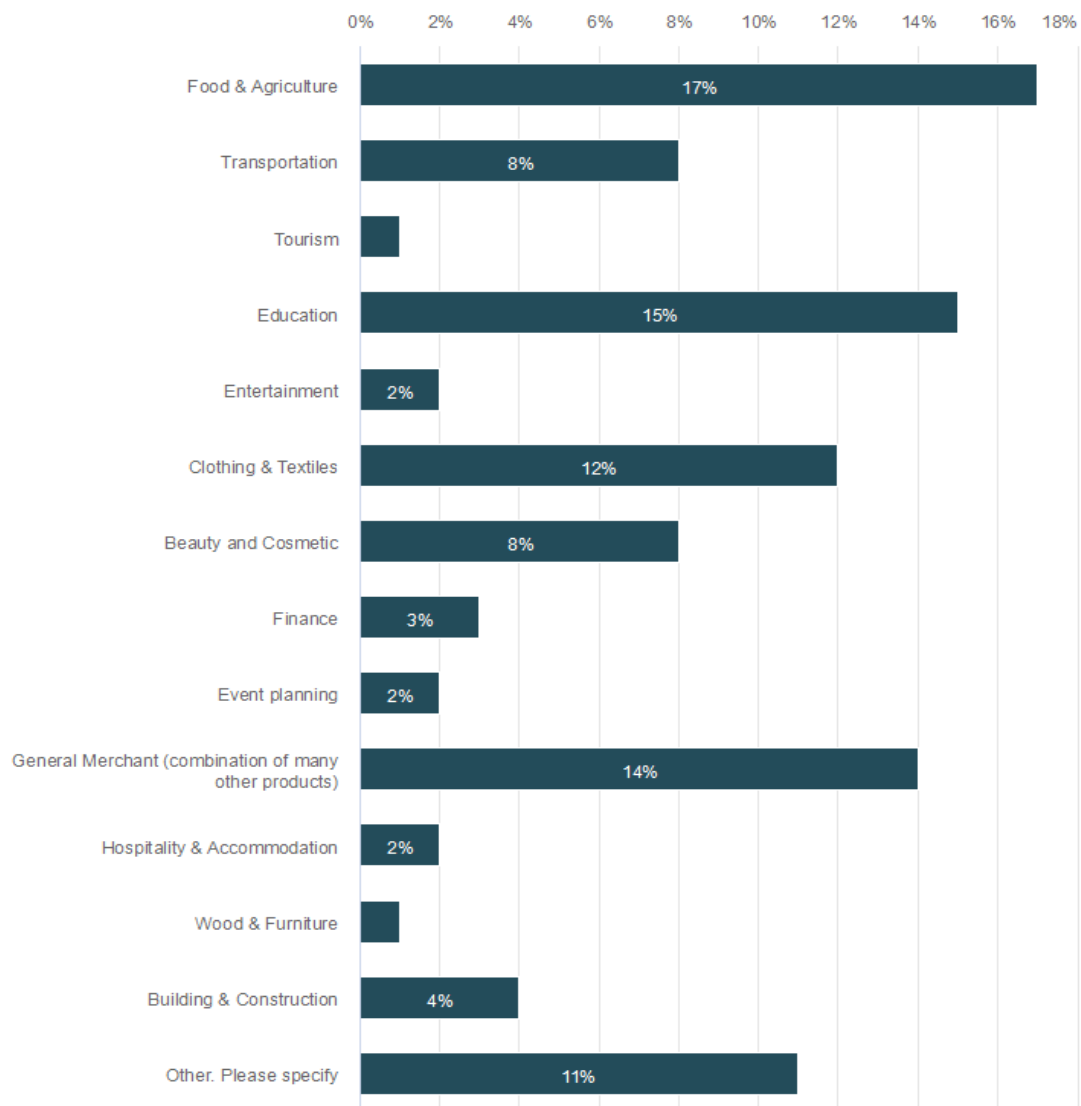


Figure 7. Type of business operations by respondents

#### 4.2.5 Number of employees

In defining an SME, the number of employees is very essential in the context of a country or region, in Ghana, the employees cap for an SME is 100. The results of the survey showed that 186 respondents representing 92% had 1 – 30 employees. 7 respondents which also represented. 3.4% had employees from 31 – 50. 2 respondents which represented 1% answered that, they had 51 – 70 employees. 71 – 99 employees recorded 0. Finally, 7 respondents had 7 employees corresponding to 3.5%.

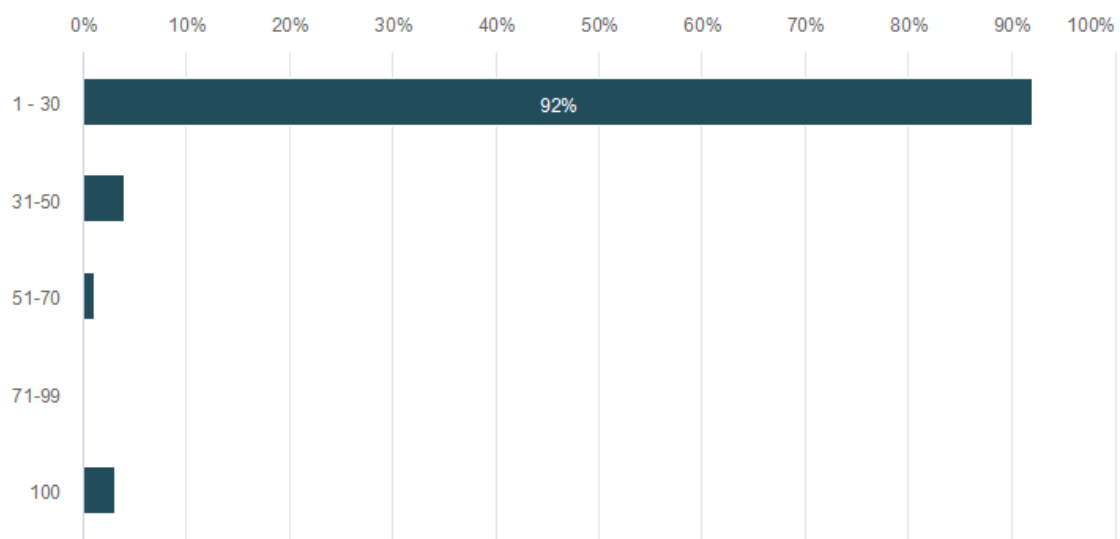


Figure 8. Number of employees of SMEs

#### 4.2.6 Internet service providers

The respondents were asked whether they used internet services in their various businesses. Those who answered 'Yes' were further asked about their service providers. This question was very vital with regards to measuring and improving accessibility. The listed service providers were Vodafone, MTN, AirtelTigo, Surfline, Busy 4G, iBust and Teleda.

According to the survey, 28 people, which represented 13.8% responded that they used Vodafone. As high as 168 respondents, representing 83.2% used MTN. AirtelTigo also recorded 2 respondents, representing 1%. Only 1 person, thus 0.5% of the respondents used Busy 4G. None of the respondents used

iBustt, Surfline or Teleda. 3 respondents representing 1.5% used both MTN and Vodafone.

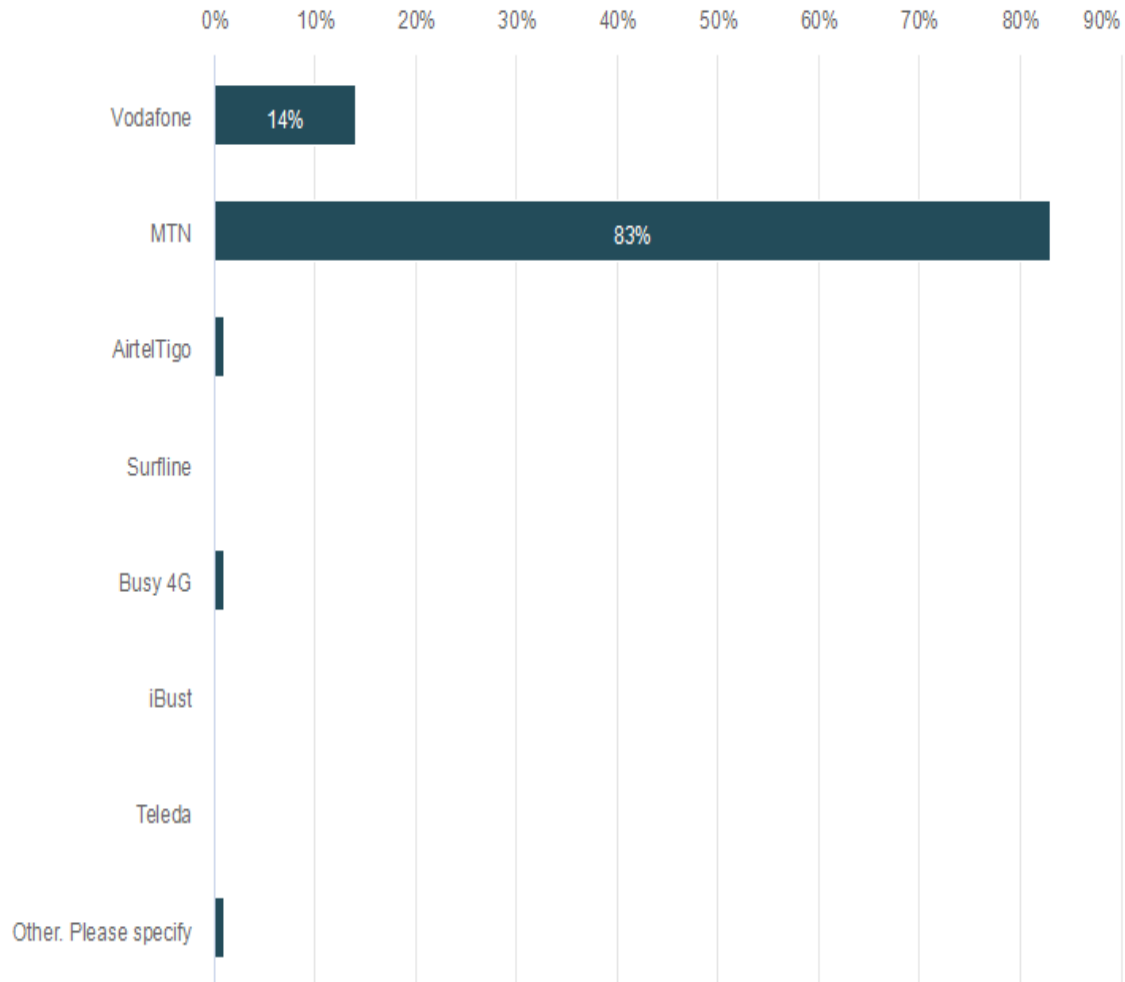


Figure 9. Internet service providers of SMEs

#### 4.2.7 Purpose of internet or social media usage

Respondents who used the internet and social media were again asked for the specific purposes for the usage. The respondents had possibilities of choosing multiples answers from the options of communication, advertisement, online payments as well as specifying others that were not stated. The results showed that, 140 respondents representing 69% used the internet for communication purposes. 155 respondents also representing 77% advertised their businesses on the internet. 88 respondents which represented 44% used the internet for online

payments. 7 respondents representing 4% had used the internet for other purposes such as research, booking and consultations.

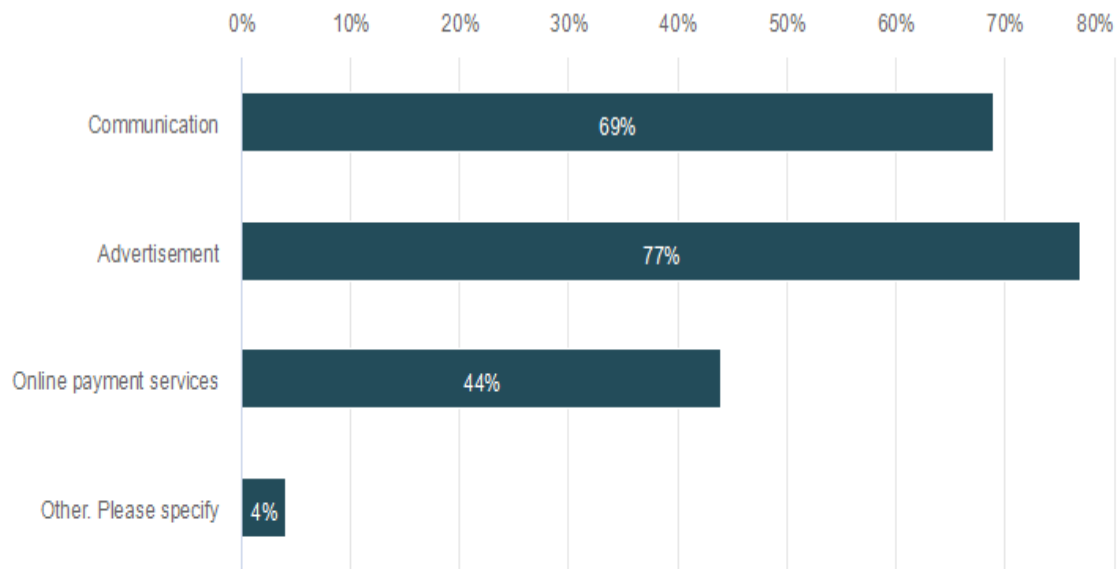


Figure 10. Purposes of internet usage by SMEs

#### 4.2.8 Business location

Location was very important with regards to internet accessibility in Ghana. Therefore, the researcher decided to pay attention to the areas where the businesses of the respondents were located. Due to this, the survey was administered across all the regions in Ghana.

The results showed that, 33.5% of the businesses were in the Ashanti region, whereas 13.6% were in the Greater Accra. Bono region recorded 7.3% and Bono East just 1.1%. 10.5% of the businesses were in the central region. Ahafo region had 2.1% whilst Eastern region recorded 5.2%. The three Northern regions recorded a combined total of 17.3%. 2.1% and 0.5% were recorded for Volta and Oti regions respectfully. Finally, Western region, recorded 8.4%.

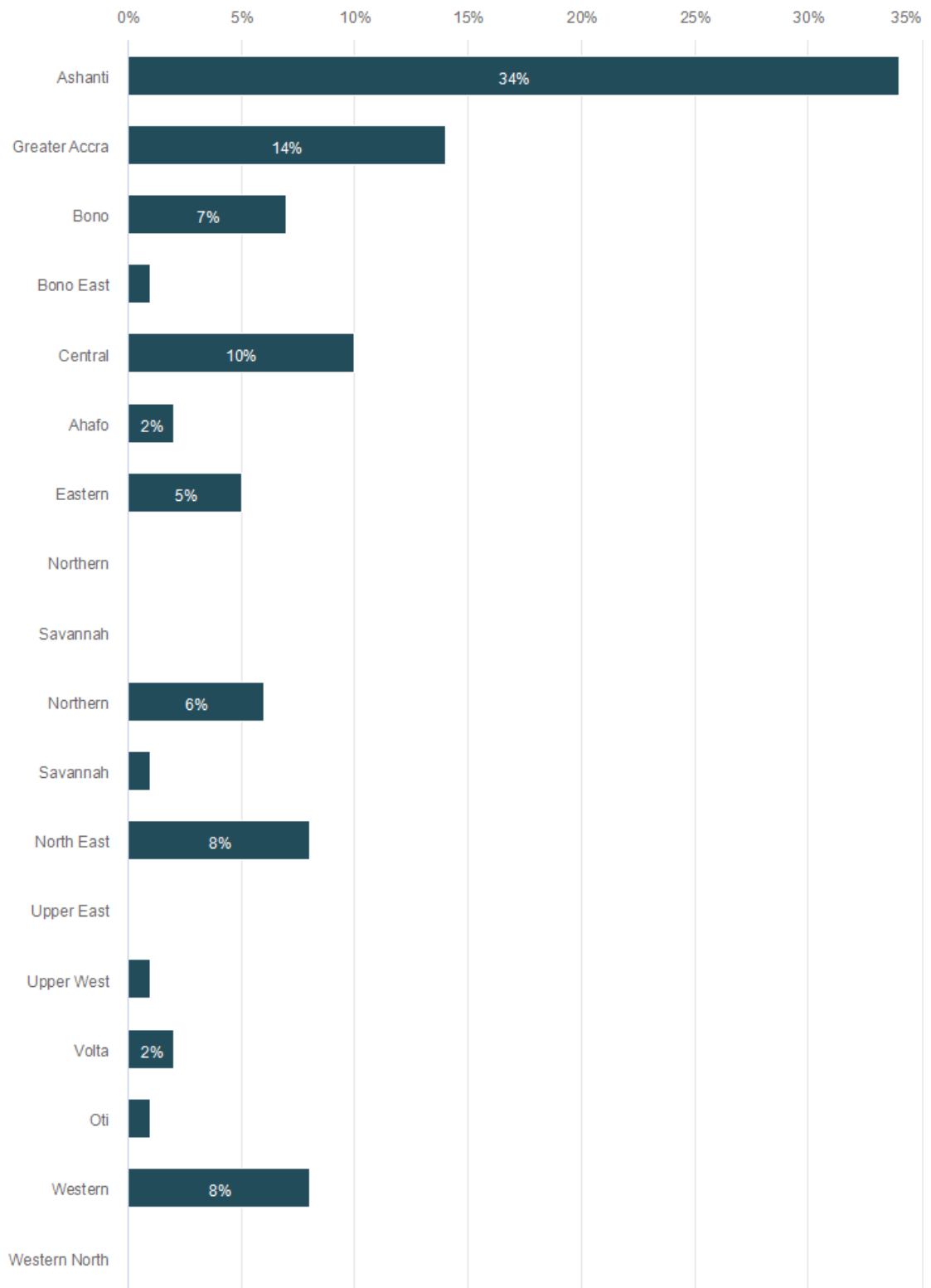


Figure 11. Regional locations of SMEs

#### 4.2.9 Signal strength / Internet reception

Another question that was asked to achieve the accessibility objective was the strength of their internet signals. This was measured in the ranges of very strong to very weak. This was based on the location of the businesses. According to the results, 16 respondents representing 7.9% felt that network signals were very strong, 32.2% in the numbers of 65 respondents also answered their signals were strong. The network signals were somehow Ok to 96 respondents representing 47.5%. The signals were weak for 19 respondents also representing 9.4%. Finally, 6 respondents, representing 3% had very weak signals.

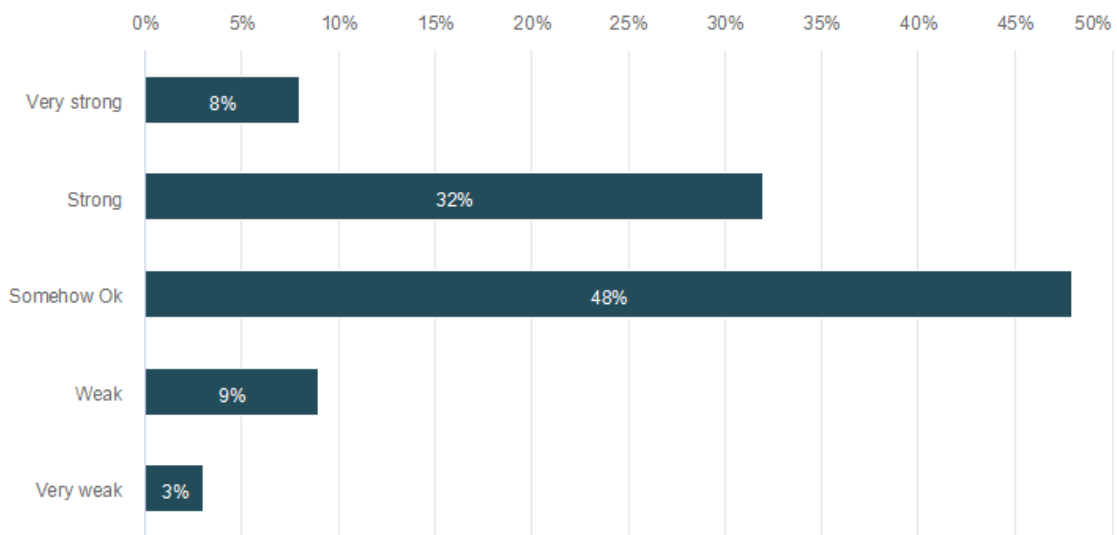


Figure 12. Internet signal strengths

#### 4.2.10 Internet device

Internet is very crucial in accessing online services. Therefore, respondents were asked about their means of accessing the internet. The devices were modem, mifi, router and smartphone. According to the results, 4% each of the respondents accessed the internet through a modem and mifi. 9% used routers to access the internet. And as large as 84% of the respondents had access to the internet through smartphones.

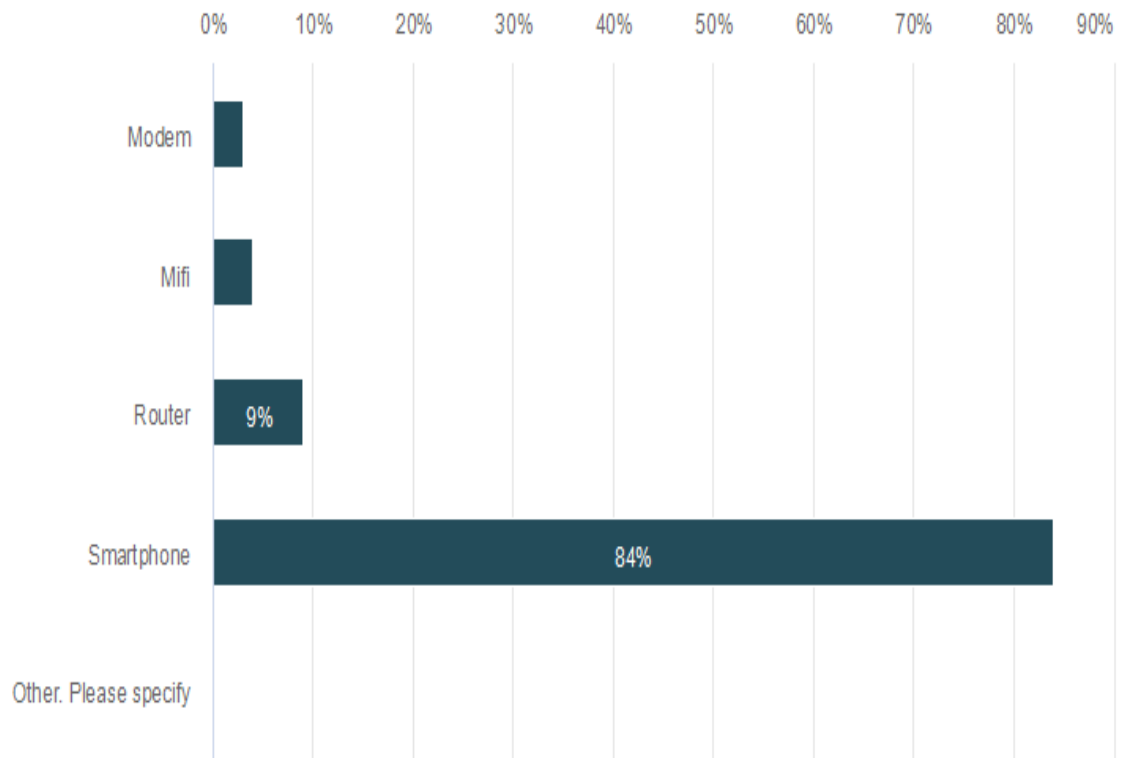


Figure 13. Internet devices used by SMEs

#### 4.2.11 Internet prices

Another item on the survey was the pricing of internet services. Respondents were asked whether their internet services were affordable or expensive. And 3 respondents, representing 1.5% answered that their internet services were very affordable. 22, representing 10.9% also answered their internet as affordable. 24.7% which were 50 respondents answered that the pricing of their internet services was somehow normal. As high as 103 respondents, representing 52.2% answered their internet was expensive. The cost of internet service was very expensive for 24 respondents, which represented 11.9%.



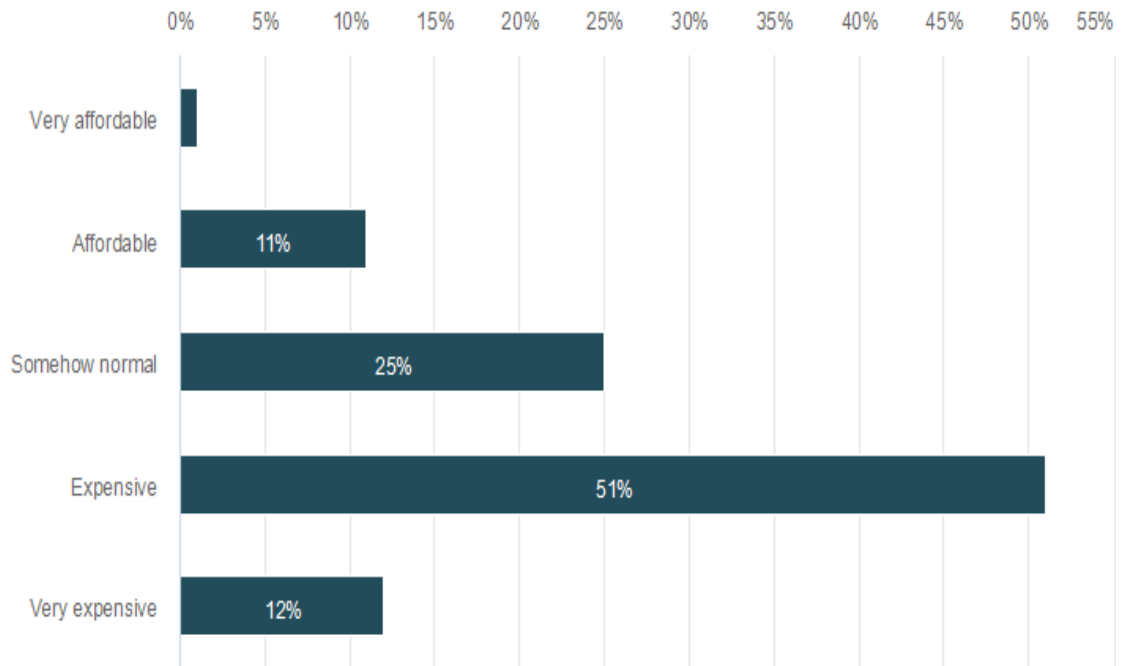


Figure 13. Internet prices

#### 4.2.12 Special internet offers for SMEs

When asked the question of whether their service providers have any special offer for SMEs, about 90% responded that, they were not aware of any. Just less than 10% responded that they had zonal internet bundles that are quite cheaper and ~~even~~ not targeted to SMEs. The zonal bundles are just open to all the internet service users of MTN. Some of them also mentioned that they received discounts from MTN App internet bundle purchase. Others also answered that there are occasional promotions by their service providers.

#### 4.2.13 Service satisfaction

After comparing the cost of the internet to the quality of internet they received, respondents were then asked whether they were satisfied with the quality of service they receive from their providers. The results showed that, only 4 of them, representing 2% were very satisfied with the service they received. 52 respondents, representing 25.7% were satisfied with their services. 106 respondents,

largely representing 52.5% answered they were somehow just satisfied with the services from their providers. 40 respondents, also representing 19.8% were dissatisfied.

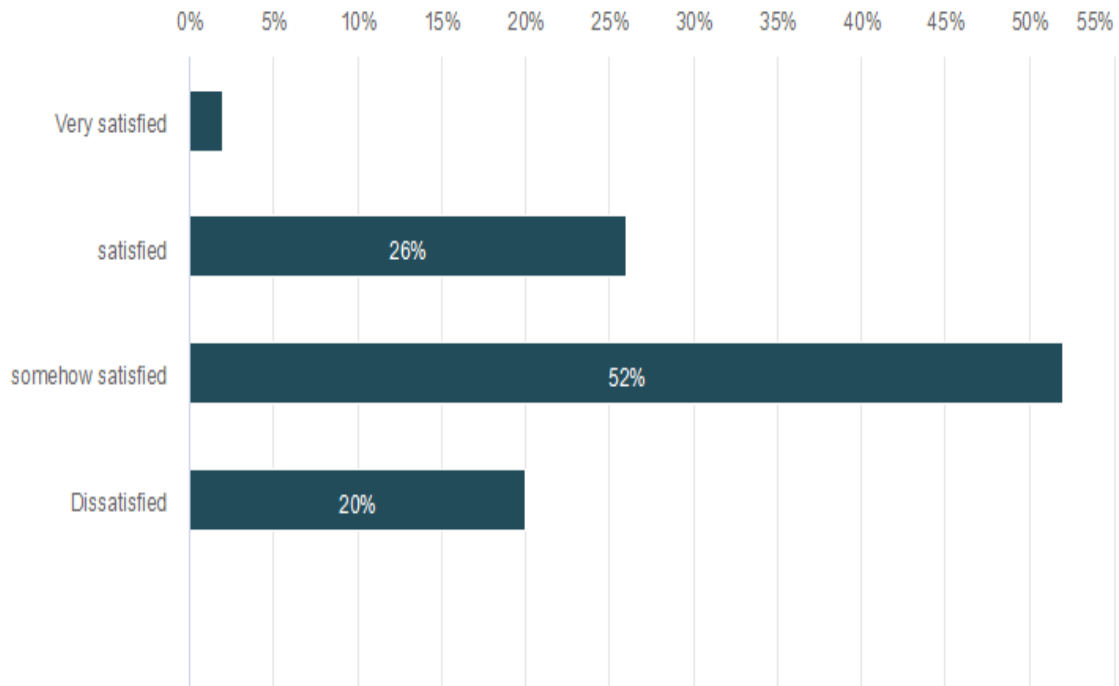


Figure 14. Internet service satisfaction by SMEs

#### 4.2.14 Challenges in using internet service

Respondents also addressed the challenges they faced in accessing the internet. The problems ranged from poor connectivity to high cost of the internet. Some of them continued to mention that the internet connectivity was very poor at certain periods of the day and during the times when it rains. This results in lower internet speed which slow down surfing and other online activities. They went further to mention that it was sometimes very difficult to make online payments when the connectivity is poor.

Furthermore, it was mentioned that they had limited amount of data to be used within a limited time frame which gets exhausted within a short period of time. Again, the issue of inconsistency on the internet was addressed which in turns affect their communications.

#### 4.2.15 Positive impacts of good internet services on businesses

A wide range of positive impacts were made on businesses because of good internet services. One of the most mentioned was the fact that a good internet connectivity helps to reach a larger number of customers through easy and faster online advertisements. This in turn helps to gain many orders for many who usually do online businesses. For an online business, there is almost no physical contacts between the seller and buyer. Therefore, there is a larger reliance on the internet. Another aspect of positivity was communication. The respondents largely mentioned that they communicate mostly with their customers through social media Apps such as Facebook, Instagram, and WhatsApp. Since many customers spend much time on those social media platforms, communicating with them is made easier with the help of the internet. A good internet helps to be in constant interaction with customers.

Again, the use of internet helped the businesses to enhance productivity. According to some of the respondents, having a good quality network helps the internal affairs of the enterprise to run smoothly. This ranges from production, advertisement, sales, and deliveries. Moreover, the respondents had a greater advantage of obtaining further information about their work through the internet. Research is made easier with a good quality of internet as mentioned by some respondents. According to them, they had to sometimes surf for information on things they do not know about. Ultimately, all those positive impacts yield to increase in revenue. According to the respondents, when things get smoother, with the help of the internet, their sales are improved, hence an increase in profit.

#### 4.2.16 Negative impacts of poor connectivity on businesses

The results of the survey further showed that when there are interruptions in the quality of network connections. It inhibits communication. According to the respondents, doing business these days requires a constant interaction between them and their customers. Creating a gap in the communication may result in losing a customer to a competitor. Therefore, when the quality of the internet is

poor, it creates a communication gap, and they risk losing their customer and in the long run decrease their chances of gaining new customers.

Another negative effect of poor connectivity as mentioned by the respondents was difficulty in accessing social media platforms. According to them, they were unable to actively be on social media when they have network challenges. Meanwhile, most of the marketing activities take place on social media. They also mentioned that, when there are network challenges, they find it very difficult to do financial transactions, especially with online payment systems. Most of their activities are put on hold when financial transactions do not go through. Again, they mentioned that the poor internet connectivity has a negative effect on their daily sales. For example, when their connection is poor, customers are unable to make orders as smoothly as they should. Sometimes even when the customers can, the sellers deliver at a slower pace.

#### 4.2.17 Measures to improve internet accessibility to benefit SMEs

In the last item on the survey, respondents were asked to suggest some of the actions that could be taken to get the accessibility of the internet improved to benefit SMEs. Several suggestions were given. The most popular among them was that there should be a wider internet expansion to many different areas than only the urban centres. According to the respondents, the network coverage must be wider enough to cover all the cities and towns in Ghana. The focus of the internet coverage must not be only in the big cities, they must also pay attention to the rural areas. Some of the respondents also suggested that there must be adequate network poles and optical fibre throughout the country to enhance easy and quality accessibility.

Other respondents also think that other service providers such as AirtelTigo, Surfline, Busy 4G, iBust and Teleda must be competitive enough. This was mentioned because, they thought those service providers are not giving enough competition to the main providers, thus MTN and Vodafone which almost feels like a monopoly. With regards to the internet pricing, many respondents were of the

view that there must be affordable internet packages especially with special offers for SMEs.

## 5 DISCUSSIONS AND CONCLUSIONS

In this final chapter, the results of the research were discussed. Conclusions were also made on the research. The chapter additionally made an analysis of the theoretical and practical implications of the research. The research has some limitations; therefore, recommendations were made for future researchers.

### 5.1 Summary of the Results

The main objective of the research was to investigate the effect of internet accessibility on SMEs in Ghana. To a higher extent, the results have given a fair view of the general notion that poor connectivity and higher cost negatively affect business activities of the SMEs.

From the results, it clearly shows that the number of female entrepreneurs are fewer in number even with formal education and measures to empower women. In Ghana most of the businesses are owned and managed by males. This traces back to history where men have always taken active roles on almost all the aspects of the country. The financial resources of the country largely lie with the males than their female counterparts. Men are also highly competitive for power in Ghana.

It could also be deduced from the results that, more than 80% of the respondents who are entrepreneurs and managers are within the ages of 18-40. This is a good sign that indicates youth empowerment. There are tremendous benefits of having a larger number of the youth venturing into entrepreneurship. There is a higher number of youth unemployment in Ghana. But it is also quite interesting to know that some of these young ones are trying to do something beneficial for themselves and for others. This helps to create many informal sector jobs thereby reducing social vices.

It is no surprise that most of these young entrepreneurs prefer to have a sole ownership of their businesses. From the results, over 70% of the respondents had a sole proprietorship type of businesses. This could be linked to the fact that

many of these businesses thus, about 30% are engaged in petty trading, mostly in the food sector as well as general merchandise. About 90% of the businesses also have a between 1 -30 employees which could be classified as small business. The number of businesses with more than 30 employees were extremely low, according to the results.

On the other hand, it must be noted that digital business is gradually taking shape amongst SMEs in Ghana. From the results, it can be deduced that as high as 98% of the respondents used at least a form of internet service in their business. The internet is used for different purposes such as communication, marketing, online payments, amongst others. This shows that, even though, Ghana is a developing country, the relevance of the internet in doing business has greatly been understood and adopted by many businesses regardless of the size of the business. Gone are the days when Ghanaian entrepreneurs solely relied on traditional ways of doing business.

The most common device used in accessing the internet by the SMEs is smartphones. As high as 83% of the respondents have been using smartphones as their means of accessing the internet. This could be justified by its mobility and portability. These smartphones require internet before it can be used to access online services. Therefore, the service of a provider is needed. From the results, MTN highly dominates the market share by 84%. Which means that, it is the most popular service provider in the country. Followed by Vodafone with just about 14%. The remaining five service providers seemed very unpopular in the country. The network connectivity seemed just ok with occasional interruptions. There are connection problems at certain times, especially when it rains. But with just an average internet quality, the cost of access is expensive. 65% of the business owners responded that their internet is either expensive or very expensive. With an average expenditure of about 300Ghana Cedis per month on the internet, it is deemed expensive.

It was not known whether the service providers had special promotional offers or packages for SMEs. To the business owners, they were not aware of any. Even if there is any, their education and publicity is very low. Due to this, most of these

owners were somehow satisfied because they can use the internet basically for their daily activities with an average speed. With respondents across all the regions of Ghana, it can be fair to say that internet coverage is spread across the country with poor connectivity especially in the rural areas. It could also be emphasized that, despite the numerous of challenges faced in accessing the internet, its positive impacts cannot be underestimated. For example, it makes advertisement and reaching out to many potential customers easier. Further, using social media platforms, such as Facebook, Instagram, Twitter and WhatsApp, entrepreneurs can market their products and services. It also ensures easy and faster communication between sellers and buyers. This helps to maximize profit in the long term. On the contrary, business owners and managers are unable to have an effective communication with their customers when there is poor connectivity. With all the benefits that come with social media, it requires a good internet connectivity to benefit from.

## 5.2 Theoretical and Practical Implications

Theoretically, there are many publications and news on the need to expand and develop the internet infrastructure in sub-Saharan Africa. Many private and international bodies especially the United Nations have tried to assist developing countries such as Ghana to improve the internet accessibility. Over the past few years, several strategies and implementations have taken place to ensure the expansion of internet in the country. Nevertheless, there is still more to be done to reach the level of the developed countries. When many advanced countries have introduced 5G network, the accessibility of even 3G and 4G are problems. There is therefore the urgent need to improve this since the mode of doing business has shifted largely to the digital domain.

Nonetheless, Ghanaians have embraced well the digital ways of doing business. The youth of the country are very active on the digital front and have taken active roles in ensuring that they survive in the digital world. Almost every Ghanaian over the age of 18 is connected to the internet and that's a good sign that they are catching up with the advanced world.



### 5.3 Evaluation of the Results

With regards to the literature review, which was the primary source of information for the study, there was a collection of multiple sources made up book, eBooks, articles, journals, and other online materials. The materials were of international standards, context related and academia publications. Being a Ghanaian, there was also a construct validity because by my experiences and observations, the selected literature practically reflected reality.

In terms of conclusion validity, the evidence of relationship between the literature review and the empirical results were very clear. There were multiple sources and opinions by different authors on the subject matter and those opinions have been validated by the results of the empirical research. For example, according to the National Communications Authority (2022), about 70% of Ghanaians are mobile subscribers which has been validated with 83% of the respondents as smartphone users.

Externally, the target of this research is to make generalization based on the results. To consider the result fair enough to make generalization a larger number of respondents was selected using simple random sampling technique. With a confidence level of 90% and margin error of just 6%, 188 respondents were scientifically required to be able to make generalization for a total of 160000 official SMEs in Ghana. With a minimum of 188 responses to make generalization, this study had 202 respondents that was over the minimum number of 188.

### 5.4 Limitations

There are few limitations to this study. It was difficult to convince many of the respondents to answer the online survey because they did not understand the purpose of answering the questions. Some of them also felt the survey was just a means to defraud them. As a result, the follow up on the survey showed that, the link was opened by 1068 respondents, 300 of them started to respond but only 202 submitted. In all, it took a period of 12 weeks to gather the desired data.

Since it was an online survey thus basically a quantitative approach, probing questions could not be asked to further measure the feelings of the respondents. It only focused on numbers. This was mainly due to the current location of the researcher; hence, the suitable method was quantitative.

## 5.5 Conclusions

The thesis had three goals, firstly, to investigate the level of accessibility of internet by SMEs in Ghana. From the results, it can be concluded that, there has been consistent improvement to the expansion of internet coverage across the country. The government together with other non-governmental organizations and international bodies have invested huge sums of money in the past few years to improve internet accessibility.

The most popular means of connectivity is through a smart phone. Smartphones are seen as the common way that connects businesses to the internet. Many of those businesses are advertised with the help of their mobile phones. There are seven internet service providers with MTN and Vodafone leading the way. The influence of MTN is highly evident according to the research. Since 83% of the SMEs used MTN, it can be concluded that, it is the most popular network in Ghana at the time of the research. Theoretically, they are one of the oldest telecommunication networks in Ghana and have a larger network coverage across the country.

Since the research cut across all the 16 regions of the country, it can also be said that there is fair accessibility regardless of the region an SME is located. At least one of the seven service providers has a network coverage in each region. This gives equal access to all the regions. It is also fair to say that the signal strength of an average internet is average. With 32% and 48% of respondents answering that they have strong and average signal strength, the network reception could be classified as fair. This translates to the fact that, most of the SMEs even though expect an improved connectivity, they are somehow or just satisfied with the quality of internet they enjoyed.

The research gave a clear indication that, the level of internet accessibility is very poor in rural areas and during times when it rains. It would therefore be recommended that; the service providers take a proper expansion project to the rural areas. This is because rural areas are usually rich in raw materials for production purposes. Therefore, it is a suitable venue for the establishment of small enterprises. Additionally, there must be a huge investment in fibre internet to be able access the internet regardless of rain.

The second goal was to investigate the cost involved in accessing the internet by SMEs. As a developing country in the west coast of Africa, the average income level of a Ghanaian is less than 800Ghana Cedis. Therefore, the prices of accessing the internet must be low. According to the result, some SMEs are spending as high as 1000Ghana Cedis on internet per month, which is very expensive. The cost of internet is very high and non-affordable to these SMEs thereby reducing their profits.

Moreover, there are no known special packages for small and medium sized businesses. To support entrepreneurship, it is recommended that the service providers with the help of the government help the SMEs in a form of promotional offers. Another challenge to the cost of internet usage in Ghana by SMEs is limitedness of the amount of data they receive from their subscriptions. Most of the packages have a limited amount of data with expiry dates. This high cost could be attributed to less competition in the telecommunication business. MTN for a long time seem to be leading the way in the provision of mobile and internet services. They are currently the most popular and have the largest number of subscribers in Ghana. They face less competition from the other providers, and this could be a reason why they have higher internet data prices.

Even though, according to literature, Ghana has the cheapest internet in Africa, Ghanaians still feel the amount of money spent on internet is higher and therefore internet cost is expensive. This can be concluded that, accessing the internet in Africa is generally very expensive with respect to the income levels and cost of living.

The final goal of the research was to analyze the extent to which the internet accessibility and cost affect the SMEs in Ghana. The effectiveness of using the internet to do business has proven to be successful according to different researchers and authors. In the case of this research, it is obvious that the larger percentage of Ghanaians are mobile phone subscribers and connected to the internet, there is therefore the need for business to reach out to their potential customers through the web. Many of these SMEs have already been using the internet to the benefit of their enterprises. The commonest use of the internet are advertisement, communication, and payments services. Social media platforms are usually used in doing business by some of the SMEs. Through social media, they tend to advertise and sell their products and services to their potential customers. Many of these businesses can do business without having to come into physical contact with the customers. It is clearly seen from the empirical result that, even though Ghana is a developing country, the business owners have understood the benefit of digital business.

With the help of the internet, communication also becomes very easier and clear. Business communication goes beyond just an audio. These days, the internet makes it easier to communicate through pictures and videos. With pictures and videos, products and services look more appealing to customers. This makes it easier to convince and attract potential customers.

## 5.6 Recommendations for Future Researchers

This thesis was strictly focused on the small and medium sized enterprises in Ghana. The findings were related to the literature and clear conclusions were made. Nevertheless, in future, it is recommended to broaden it up to the general businesses in Ghana including the large scales.

I would also recommend to future researchers to investigate the impact of internet in businesses across the whole of Africa. Even though there are quite similar characteristics amongst the different countries in Africa, which makes it justified

to generalize the findings of this study across Africa, it would just be valid and reliable to specifically conduct separate research that covers the whole of Africa.

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