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BENEFITS AND CHALLENGES OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ADOPTION ON MICRO AND SMALL SCALE ENTERPRISES IN NSAWAM ADOAGYIRI MUNICIPALITY

BY

EMMANUEL OPOKU MENSAH

(10803659)

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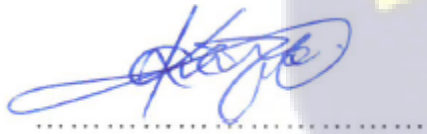
DECLARATION

I, EMMANUEL OPOKU MENSAH, hereby declare that except for appropriately acknowledged work from relevant secondary sources, this dissertation is the findings of my research undertaken at the Institute of Statistical, Social and Economic Research (ISSER) under the supervision of DR. KOFI TAKYI ASANTE and that the dissertation has not been presented elsewhere for the award of a degree.

EMMANUEL OPOKU MENSAH
(Candidate)

Date: 27th February 2023

DR. KOFI TAKYI ASANTE
(Supervisor)



Date: 27th February 2023

DEDICATION

I hereby dedicate this study to the Almighty God for seeing me through this academic journey and to my late lovely brother, Elder William Mensah for helping me achieve this dream.

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My first appreciation goes to the almighty God for granting me the gift of life throughout this pandemic period.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Micro and Small-Scale Enterprises (MSSEs) play important role in economic development by contributing to job creation and poverty alleviation. Using a mixed-methods approach, this study sought to investigate MSSE's adoption of Information and Communication Technology (ICT), the positive effects of the adoption, and the associated challenges. Drawing on a survey of 250 MSSEs and a qualitative interviews with 10 MSSE owners, the study found that MSSEs in the municipality were influenced by a variety factors in their ICT choice. These factors were new market developments, improved customer services, cost reduction, etc. The MSSE that adopted ICT in their daily operations had the opportunity to exploit new business markets and improve sales and business relations. The results showed that some MSSE owners used these technologies in doing business transactions, acquiring relevant market information, and reaching out to potential customers. However, they faced several challenges in the process of adopting these technologies. Lack of ICT support, maintenance cost, and lack of ICT skills among staff were the top three challenges faced among other challenges identified. Since they faced challenges associated with financial constraints and technical training, it was recommended the state provide credit facilities to MSSEs who are willing to procure ICT and provide training services for these enterprises.

LIST OF ABBREVIATIONS

ICT- Information and Communication and Technology

MSSE- Micro and Small Scale Enterprises

BAC- Business Advisory Centre

TAM – Theory of Acceptance Model

TRA- Theory of Reasoned Action

PBC- Perceived Behavioural Control

OECD - Office of Economic Cooperation and Development

IDT - Innovation Diffusion Theory

TPB -Theory of Planned Behaviour

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Micro and small-scale enterprise (MSSE) businesses provide an avenue for job creation and poverty alleviation. The proliferation of micro and small-scale enterprises has become the universal and most common business model in many developing countries. Vandenberg (2009) explains that MSSEs comprise about ninety (90%) of most countries across the globe. According to Abor (2016) MSSE's contribution to Ghana's Gross Domestic Product is about 70%. MSSE's growth over the period has been described to be one of the stimuli for the advancement of social and economic development forecasts for evolving economies (Oppong et al., 2014). In Ghana, the Information Communication ad Technology (ICT) for Accelerated Development (ICT4D) policy was implemented for the deployment and exploitation of ICTs in all sectors of the economy including MSSE. ICT4D policy focused on improving the digital and information distribution between private and state-owned businesses to facilitate business growth (Ghana ICT for Accelerated Development, 2003).

The ICT4D is part of the Ghana government's braoder strategic goal of creating an economy that is globally competitive, dynamic, robust, and resilient in the face of rapid changes and advances in the global economy, particularly in the area of technology-driven information and knowledge economies. The policy recognizes the importance of embracing new technologies and knowledge-based economies to enhance Ghana's economic development and competitiveness in the global market. By doing so, Ghana can better position itself to take advantage of emerging opportunities in areas such as e-commerce, digital financial services, and other technology-driven industries. It shows a recognition of the importance of keeping up with the global trends in technology and

innovation, and the need to embrace these changes to create a more prosperous and sustainable future for the country.(Ghana ICT for Accelerated Development, 2003). Currently, the digitalisation agenda creates the enabling conditions for ICT adoption.

Ghana has an entrepreneurial population, the potential for MSSEs to contribute to job creation and poverty reduction is huge (Buame, 2000; Ghana Statistical Service, 2002; Hope, 2001; McDade et al., 2005). Nonetheless, MSSE has not performed creditably well and the expected significant role in economic growth has not been fully harnessed (Oppong et al., 2014; Agboh, 2015). Despite the potential benefits of ICT adoption, such as increased efficiency and productivity, many MSSE in Ghana struggle to integrate and utilize these technologies effectively. This problem is compounded by limited access to ICT infrastructure, inadequate technical skills and knowledge, high costs of ICT hardware and software, and a lack of government support for ICT development in the MSSE sector. These challenges impede the growth and competitiveness of MSSEs, hindering their ability to take advantage of emerging opportunities in the global digital economy. Therefore, it is crucial to identify the key barriers to ICT adoption and to develop effective strategies and policies to help MSMEs overcome these challenges and leverage the potential benefits of ICT. The adoption of Information and Communication Technology (ICT) by MSSE in Nsawam, Ghana, has been growing in recent years, though at a relatively slow pace. However, there are still some challenges that limit the widespread adoption of ICT by MSSE in Nsawam.

1.2 Problem Statement

In a dynamic economy, MSSEs are an essential component of innovation and growth, and hence play a critical role in job generation (Napitupulu et al., 2018; Niebel, 2018; Zafar and Mustafa, 2017). In industrialized countries such as the United States and the United Kingdom, MSSEs employ over 99 per cent of the workforce and generate more than half of the country's GDP

(Gbandi and Amissah, 2014; Tobora, 2014). MSSEs account for 90% of all business in developing nations like Nigeria, yet they contribute less than 10% of GDP (Gbandi and Amissah, 2014). MSSEs account for over 70% of Ghana's GDP and 92 per cent of all businesses (Zafar and Mustafa, 2017). Furthermore, MSSEs in Ghana employ over 80% of the workforce (Abor and Quartey, 2010).

The development of Information and Communication Technology (ICT) has altered the way commercial activities are conducted in the new global economy. Furthermore, it has drastically altered many elements of economic and social life, establishing new standards of living (Jaganathan et al., 2018). The transformation of the industry structure and competitiveness in the market to a new level is one of the significant changes in the millennium (Al-Moawi, 2011). This change in the business environment has not only given additional opportunities for MSSEs but has also increased the risk of MSSEs being driven over by larger, more established businesses.

MSSEs continue to fall behind in strategy development and implementation (Schlemmer & Webb, 2009), jeopardizing their ability to meet current economic demand and remain competitive (Ahmedova, 2015; Arendt, 2008). ICT is critical for business development, so MSSEs must have access to technology to effectively engage in the rapidly changing market environment. According to Jia et al. (2017), most MSSEs have realized the value of ICT in their everyday operations as a result of ICT assistance for internal communication, business efficiency, and information sharing with business stakeholders. This study, therefore, seeks to investigate the benefits and challenges of ICT adoption on Micro and small-scale enterprises in Nsawam-Adoagyiri Municipality.

1.3 Research Objectives

The main objective of the study was to assess the benefits and challenges of ICT Adoption on Micro and small-scale enterprises in Nsawam-Adoagyiri Municipality.

1.3.1 Specific Objectives

Specifically, the study sought to;

1. Examine the level of adoption of ICT in the operation of MSSEs.
2. Identify the benefits of ICT adoption to MSSEs.
3. Find out the challenges MSSEs face in their quest to efficiently adopt ICT in their daily business operation.

1.4 Significance of the study

MSSEs play a key role in the Ghanaian economy. It contributes to wealth and job creation and improves the living standards of people. The outcome of the study would inform policymakers and state institutions to legislate laws and policies that would strengthen the sector. The study would further inform governments and businesses that seek to improve their productivity by adopting new ICT in their operations. The results of the research would be a guide for the implementation of ICT in MSSE operations. The study would open up complementary studies in the field of technology and the associated implications for MSSEs. The study would add up to existing literature that would be available to students and academic researchers in Ghana and the world.

1.5 Organization of the Study

This study consists of five chapters. Chapter One of the study consist of the introduction of the study which provides information on the background and the research problem. Chapter Two of the study consists of a relevant literature review on MSSEs and their relation to ICT adoption through which relevant theories were also reviewed. Chapter Three of the study focuses on the methodology adopted by the study. It consists of the study area, research design, sampling and sampling technique, data collection instrument, analytical method, and ethical considerations. Chapter four looks at the discussions of the results of the study. The final chapter thus Chapter

Five presents the summary of findings, and conclusions. It involves recommendations for policymakers and future studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In the 21st century, ICT has become an essential element for economic growth and development. ICT has contributed to the economic development of major countries worldwide. The rise in ICT influenced the facilitation of social change and financial activities and improved the quality of life. ICT has also played a role in effective governance within the political system. The contributions of ICT have been prevalent and businesses that failed to adopt appropriate and adequate technology find difficulty in competing in the global market. ICT is reforming the market system by facilitating the promotion of businesses and business growth. For instance, the internet and e-commerce have provided the opportunity for entrepreneurs to have access to wider trading systems and lowered the cost-of-service provision (Humphery et al., 2003). With the introduction of ICT into the global market system, MSSE owners were forced to adopt these technologies to gather and communicate with their targeted markets. MSSE owners have had to invest more resources in acquiring ICT to boost their businesses.

In this chapter, the researcher grouped the study into themes; concept and development of MSSEs, concept and development of ICT, ICT adoption in MSSEs, benefits of ICT adoption by MSSEs and challenges of ICT adoption by MSSEs. The literature review included content from peer-reviewed journal articles, scholarly books, and scholarly websites.

2.2 MSSEs and Economic Development

Micro and small-scale enterprise make up the majority of enterprises in most economies, contribute significantly to innovation, and are critical to the economic success of both developed and developing countries (Ghobakhloo et al., 2012; Mazzarol, Clark, & Reboud, 2014). Micro and

small-scale sized enterprises are the lifeblood of both established and emerging economies, as well as efficient and prolific job creators (Tambunan, 2011). In developing countries, the MSSE sector has played a significant role in economic development, poverty reduction, and employment (Tarut & Gatautis, 2014). The success of MSSEs in any location would aid in the creation of jobs, the reduction of poverty, the expansion of GDP, and the promotion of economic growth.

In developing countries, MSSEs are vibrant actors in domestic economic activities (Tambunan, 2011; Taylor, 2013) and are an important part of innovation and growth in a dynamic economy; consequently, MSSEs play an essential aspect in job creation (Dermol & Tavar, 2012; Gagliardi, 2013). MSSEs are key sources of employment, commercialization and innovation development, as well as a way to improve competitiveness in the global markets (Ghobakhloo et al., 2012; Ghobakhloo & Tang, 2013; Taylor, 2013).

Developing MSSEs through entrepreneurship has been a popular method for developing countries to create jobs, generate cash, eliminate poverty, and foster socioeconomic growth (Hassan & Olaniran, 2011). In both developed and emerging countries, strong, dynamic, and efficient MSSE sectors are critical for gaining a competitive advantage and ensuring long-term economic development (Taylor, 2013). In every economy, the creation of MSSEs will boost socioeconomic growth and eliminate poverty, especially in emerging countries.

2.3 MSSE Definition

Though there is no standardized or universal definition, MSSE has been recognized for the role it plays in an economy. Some state institutions such as the National Board for Small Scale Industries (NBSSI) and Ghana Statistical Service have defined MSSE using different benchmarks. The Ghana Statistical Service (GSS) defines micro businesses as enterprises that employ less than 6 persons whiles those that employ 6 or more people are classified as Small, Medium and Large-

Sized Enterprises (Ghana Statistical Service, 2015). The NBSSI defines MSSE using the number of employees and the value of fixed assets as the key criteria. Micro enterprises employ a maximum of 5 people with a maximum of $10,000 fixed assets excluding buildings and land whiles small enterprises employ between 6-30 workers with a maximum of $100,000 fixed assets excluding lands and buildings. The NBSSI further classified MSSEs as follows: Microenterprise: less than 5 employees; Small enterprise (6 – 30) employees; Medium enterprise (31 – 99) employees; and Large enterprise (100 and more) employees (Oppong et al., 2014).

Operationalising MSSE definition for this study, GSS MSSE conceptualisation would be used. The number of employees was a key criterion used in defining MSSEs. Therefore, for this study, the micro-enterprises constitute those employing up to five (5) workers; small enterprises are business units that employ between 6 and 30 employees. However, according to data gathered from the field, none of the enterprises had employees of more than 30 which provides the basis to define the organizations under study as micro and small-scale enterprises (MSSEs). The selection of the MSSE definition reflects the enterprise situation in Ghana and provides an avenue for the inclusion of several enterprises in the study

2.4 MSSEs in Ghana

MSSEs in Ghana are divided into two types: urban and rural. The former might be classified as "organised" or "unorganised" businesses. The organized ones have paid staff and a registered office, whereas the disorganized ones are largely made up of artisans who work in open areas, temporary wooden buildings, or at home, with few or no salaried employees (Quartey & Kayanula, 2000). They are more reliant on apprentices and family members most time. In the rural enterprise setting, family groupings, individual artisans, and women are included in food products made from

local crops. The major activities in this sector include Timber and mining, tailoring, beverages, village blacksmiths, electronic assembly, food processing, bakeries, wood furniture, brick and cement,chemical-based products, wood furniture, mechanics, agro-processing, ceramic, clothing and tailoring, and fabrics (Quartey & Kayanula, 2000). The majority of MSSEs are operated and owned by women, which is often home-based than MSSEs owned by men; they operated from homes and are barely accounted for in official statistics.

Micro and small scale-sized enterprises are critical for economic development, but they face several challenges, particularly in developing nations like Ghana. These factors include a lack of adequate credit, a significant lack of technological advancement, inadequate and inefficient infrastructure, a scarcity of skills, a lack of entrepreneurial skills, and high employee turnover, all of which have an impact on growth, performance, and productivity (Gbandi & Amissah, 2014; Tobora, 2014).

A crucial aspect that promotes MSSE growth is the national climate for innovation, which includes factors such as government policy, company expenses, and communication infrastructure quality (Mazzarol, Clark, Reboud, Gough, & Olson, 2014). Factors impeding MSSE development include inadequate access to proper technology, government policies, weak institutional capacity, limited access to the global market, available financial and non-financial assistance, organizational culture, weak financial strength, top management leadership skills, and socioeconomic factors (Mbizi et al., 2013; Nguyen, Mort, & D'Souza, 2015).

2.5 The Concept and Development of ICTs

ICTs are any technology that is capable of capturing data electronically, process, communicating and transmitting data (Ashrafi & Murtaza, 2008). Examples of these technologies include tablets, laptops, desktop computers, wireless or wired intranet, handheld devices, corporate applications

such as spreadsheets, network security, editors, and data storage applications (Ashrafi & Murtaza, 2008).

ICTs can be referred to as the hardware, software, and services utilized by a business to process information to achieve its goals and objectives (Okundaye, 2016). Furthermore, Wangwe (2007) classified ICT as various forms of independent media such as mobile phone, television, telephone, radio, video, fax, voice recognition systems, and fax, of which computers whether internet-connected or not being inclusive. He describes ICT as a digitally integrated system that combines technology and the infrastructure that is capable of storing, manipulating, delivering and transferring data.

According to Ongori & Migiro (2010), several technological factors encompass ICT development. These factors include hardware, software, telecommunication systems, applications and information systems and devices that can build, process, analyze, store, transform data, receive and disseminate information.

As a result, ICT can also be seen as a systemized network of communication technology and data resource which collects, transforms, and disseminates information among businesses, and within the business, including MSSEs (Apulu, Latham, & Moreton, 2011). According to (Campo, Rubio, & Yagüe, 2010), the evolution of ICT has resulted in significant changes in companies during the last two decades. These improvements may be seen in their organizational structures, processes, and interactions with other businesses, and they have helped companies to improve their economic and relational performance.

Similarly, (Selamat et al., 2013) claim that MSSEs can benefit from efficiently adopting ICT to improve their competitive edge, develop a worldwide and international network of product

exchange, and improve their business processes. Many firms used ICT in a wide range of business operations and operating areas, according to Kollberg & Dreyer, 2006. ICT provided new means to store, process, distribute, and share information within organizations as well as with their stakeholders (Kollberg & Dreyer, 2006). ICTs are being used by businesses to manage their inventories, oversee accounting, manage and develop their human resources, and so on. Furthermore, ICTs can be utilized to improve product and service quality, minimize storage costs, speed up operations, eliminate or reduce paperwork, and better interact with stakeholders and partners.

For managers and staff to be able to gather data from several sources, process it, analyze the data, and select the relevant ones they should have some technical skill training to help them make appropriate and proper decisions based on the information for organizations, including MSSEs, to use ICTs effectively (Eze et al., 2015). In addition, government, and policymakers should prioritise policies that seek to promote the diffusion of ICT in all angles of operations, and managers should focus on inspiring and motivating workers to use ICT to improve the overall performance that would influence customer attraction force, innovative production and international market production (Higón, 2012).

2.6 ICT adoption in MSSE

The adoption and use of technologies have become an essential tools which enterprises use to improve the effectiveness and efficiency of their operations and change existing enterprise models (Jones et al., 2014). According to Rahayu & Day (2015) business owners including MSSEs adopt and used ICT to survive in this recent and innovative business economy. Globally, ICT adoption and usage have changed the dynamics of MSSEs which has led to a significant growth achievement and increased innovation, efficiency, and effectiveness. (Jones et al., 2014; Tarutė & Gatautis,

2014). According to (Asare et al., 2012) argued that small and large enterprises in developed states significantly improved due to ICT adoption since 2005. The adoption rate of ICT has been very low in developing states which contributed to low economic growth. Entrepreneurs needed to adopt innovations to be more competitive and gain access to the global market. The adoption fast-tracked major expansion and improvement of MSSE performance both in developing and developed states (Al-Debei & Al-Lozi, 2012; Tarutė & Gatautis, 2014). A study conducted by Mokaya, (2012) about ICT adoption by small enterprises in Kenya showed that factors such as the cost of ICT, MSSE owners, and managers' knowledge level, the access to finance from financial institutions affected adoption and usage.

2.7 ICT Adoption Theories

2.7.1 Theory of Reason Action (TRA)

The Theory of Reason Action (TRA) was developed by Fishbein and Ajzen (1975), a behavioural theory that seeks to explain an individual's behaviour as being heavily reliant on behavioural intent, focuses on the individual's attitude towards the behaviour and subject norm. TRA explains further that, individuals' decisions are based on the intended outcomes the individual expects after performing that behaviour (Rahayu & Day, 2015; Wunnava, 2015).

About TRA, the study considers a few elements as subjective norms, such as people's beliefs or early research findings. These include increasing sales (Ashrafi and Murtaza, 2008), expanding company size, and reducing operational procedures such as communication with global partners and reducing the time to access resources information), competitive advantages, and providing easy access to product information (Barba-Sánchez et al., 2007). This survey also takes into account a few questions on respondents' attitudes and intentions regarding ICT adoption.

Yousafzai, Foxall, & Pallister, (2010) and Ajzen (1991) criticised TRA on the basis that individuals do not have a choice or when there is a strong relationship between an individual's actual behaviour and intent. Due to the limitations of this theory, Ajzen (1991) developed a build-up theory to address the limitations of TRA. He developed the Theory of Planned Behaviour which included a new construct known as Perceived Behavioural Control (PBC).

2.7.2 Theory of Planned Behaviour (TPB)

In this study, another notable theory was the Theory of Planned Behaviour (TPB) which was sought to address the limitations of TRA but highlighted procedures of the intention of using new technology (Azam & Quaddus, 2013; Toft et al., 2014). The Theory of Planned Behaviour was reviewed, and a new concept was included called Perceived Behavioural Control (PBC). TPB noted three factors that influenced the behaviour intent of individuals, this included (a) subject norm (b) attitude toward a behaviour (c) perceived behavioural control (Rahayu & Day, 2015).

According to this theory, when a researcher measures the likelihood that an individual will have the intention to carry out a particular behaviour (such as the belief in IT adoption) when he or she positively assesses it, the CEO's belief and confidence (positive assessment) appears to have a significant influence for the decision to the adoption of IT. As a result, top management confidence and perceptions of IT benefits are some of the most defining aspects driving IT adoption decisions in establishments (Chouki et al., 2019).

The conceptualization that there is a correlation between intent and behaviour was the limitation of the two theories (TRA and TPB). The two theories were weak in situations to prove high correlations between intent and behaviour (Rahayu & Day, 2015). The Innovation Diffusion Theory bridges the gap by proving a significant correlation between intent (perceived use or

perception of ease of use) and behaviour (attitude towards the use of technology) (Wunnava, 2015; Yeh, 2015).

2.7.3 Innovation Diffusion Theory (IDT)

Another theory designed by Rogers in 1962 is called Innovation Diffusion Theory (IDT) which emphasized the sociological and psychological theory without placing much focus on individual perception. The IDT explains how innovations are accepted and spread among people. The theory is more of a process-oriented approach (Rahayu & Day, 2015). Factors such as compatibility, trail-ability, relative advantage viewpoint, and innovation observation all influence technology adoption (Wanyoike, Mukulu, & Waititu, 2012).

In 1985, Davis developed the an acceptance model that explained how technology users perceive and use technology (Broman Toft et al., 2014; Ghobakhloo et al., 2012; Yeh, 2015). The model particular shows the relationship between perceived usefulness, perception of ease of use, attitude toward technology use, and intention to use technology (Wunnava, 2015; Yeh, 2015).

The theory of IDT performs a crucial role in boosting technology adoption intention and actual adoption. By definition, innovation entails a change in the methods used to engage in a traditional process. The innovation attribute compatibility was investigated in this study using the IDT theory. IDT looks at the social systems and behavioural processes that people use to embrace new technologies, claiming that people's judgments of relative advantage, trialability, observability, complexity, and compatibility of technology all influence adoption (Rogers, 2003).

The theory was criticized by W. LaMorte, (2019) that it failed to consider individual resources and social support in adopting to innovation or behaviour. The Technology Acceptance Model

addresses the majority of the flaws of TRA, TPB, and IDT. Nevertheless, the model will be adopted to explain in this study the ICT adoption attitude of MSSE in Nsawam.

2.7.4 Technology Acceptance Model (TAM)

The Technology Acceptance Model is a recognized theoretical model capable of predicting users' behaviour toward ICT usage (Ghobakhloo et al., 2012). An extension of the TRA was the TAM which explains why technology users accept or resist new ICTs. TAM also recognizes other external variable factors such as belief systems, attitudes, and intention to use ICT. This model would be the underlying framework for examining the attitude of MSSEs owners and managers toward ICT adoption (Awiagah, Kang, & Lim, 2016; Wunnava, 2015).

The technology acceptance model has two underlying cognitive, thus perceived usefulness and perceived ease of use (Awiagah et al., 2016; Davis, 1985). The model identifies perceived usefulness, perceived ease of use, and behavioural intent as direct and indirect factors that affect individual technology usage (Ghobakhloo et al., 2012). The technology acceptance model is the best fit theory used in explaining an individual's acceptance of new technologies (Broman Toft et al., 2014; Olise, Anigbogu, & Okoli, 2014; Wunnava, 2015). The study uses this theory to explain the attitudes and behavioural factors why MSSE accept or rejects new technologies.

The TAM explains and predicts user behaviour toward ICT, with perceived utility being one of two causal antecedents of new technology uptake and use (Abdullah & Ward, 2016; Rahayu and Day, 2017). As used in this study, TAM establishes the association between perceived utility, performance expectancy of use, approach regarding computer use, and desire to utilize technology, which was used as a paradigm to describe Ghanaian MSSEs' ICT adoption techniques.

2.8 Benefits of ICT adoption by MSSE

MSSE owners and managers have adopted ICT in their business operations to enhance their products and services and create a competitive advantage (Gagliardi, 2013). ICT adoption is now a deliberate strategy mechanism where MSSE owner is capable of achieving and sustaining competitive advantage (Ghobakhloo et al., 2012). ICT diffusion boosts economic growth and enhances technology diffusion and innovation, reduces production cost, improves service delivery, enhances quality decision making, and increases demand (Elbeltagi et al., 2013; Gagliardi, 2013; Mustafa, 2015). ICT increases MSSE efficiency and promotes effective decision-making to discover more business opportunities and maximizes benefits. ICT creates a fundamental opportunity for businesses to grow and compete when utilized. The rapid adoption of new technologies in MSSE can improve product innovation and global competition (Elbeltagi et al., 2013; Higón, 2012).

A major advantage of adopting and using ICT is to aid MSSE and organizational owners achieve reduced costs in their production, promote efficiency, and create a higher competitive advantage by introducing new product innovations (Higón, 2012). MSSEs that use more ICT applications and devices fused in their business operations have higher rates of product innovation (Higón, 2012). According to Higón (2012), ICT has significantly increased the firm's performance levels, MSSE owners who fully adopted ICT had higher chances of holding a larger market share than those enterprises who had limited technologies adopted.

In developed countries such as United Sates, highly educated and skilled employees are more conversant using ICT and that has contributed to their economic growth. (Kuofie et al., 2011). According to Cardona et al., (2013), undertook a study focused on understanding the effects of ICT on economic performance in both developed and developing states. The study proved ICT has

a positive correlation with economic development. The study was. It was also evident from the study that, there was a positive correlation between enterprise ICT adoption and its growth which indicated that highly educated and skilled employees contributed significantly to the growth due to their capability of adopting and using ICT tools.

A study by Kuofie et al.,(2011) proved a positive relationship between ICT adoption and economic development. Studies by Gagliardi, (2013) & Mustafa, (2015), supported evidence of ICT adoption promotes enterprise development and enhances economic growth specifically in developing states. According to (Gagliardi, 2013; Tovar, 2012) the researchers found ICT was very beneficial which enhanced business operations more effectively and efficiently resulting in higher work performance and improved economic growth.

The study by Kuofie et al., (2011) in Ghana showed growth in ICT adoption specifically the use of mobile phones significantly contributed to the region's economic growth. More than 80% of the study participants approved that, ICT diffusion specifically mobile phones have benefited all sectors of the economy (Kuofie et al., 2011). The use of ICT has progressively changed the operations of enterprises, driving the orthodox way of conducting businesses.

Akomea-Bonsu & Sampong, (2012) clearly stated in their research conducted in Kumasi found the majority of the enterprises use ICT to contact customers, search for general information, emailing for the sourcing of raw materials. The majority of the MSSEs stated that they recognized the significant performance and other benefits of utilizing ICT in their business (Akomea-Bonsu & Sampong, 2012).

Micro and small-scale enterprises contributed immensely to the development of the Nigerian economy. It significantly contributed to the industrial sector in Nigeria thus, owners and managers

of MSSEs adopted and used ICT to improve the growth of their enterprises (Apulu & Latham, 2011). In the developing world, ICT utilization has not reached its full potential. ICT is yet to attain its maximum capacity, particularly in rural areas (Apulu & Latham, 2011).

MSSEs adopting and using ICT have proven to contribute hugely to economic development not leaving out rural areas that have a significant number of small enterprises established there. Moreover, it is important to know the challenges faced by adopting and using ICT by MSSEs.

2.9 Challenges of ICT adoption faced by MSSEs

ICT adoption and usage have largely been portrayed as very beneficial to MSSEs and have had various outcomes on many enterprises. In the process of adoption and usage, MSSEs face numerous challenges and barriers that complicate the adoption process making it difficult to be successfully integrated. The MSSEs face numerous challenges and obstacles that complicate the adoption of ICTs. There are internal and/or external factors that could be technological or socioeconomic issues involved in adopting and implementing ICT in an enterprise (R. MacGregor, et al., 2002).

A study by Poon and Swatman, (1999) argued that ICT adoption by MSSEs slowed due to unrealized benefits. Unrealistic ICT expectations were attributed to a slow realization of its benefits. MSSEs are much more responsive to new market opportunities thereby noted to gain some level of advantage over larger enterprises. MSSEs face a major challenge of lacking physical and intellectual resource capacity to adopt and implement ICT usage to the maximum advantage of the enterprise (Berranger, Jones, & Tucker, 2001).

Evidence from Tagliavini et al., (2001), showed that lack of knowledge on potential ICT benefits and resistance to change in business operations remains the primary barrier to ICT adoption by

MSSEs. In the study, they proposed a model/framework that would aid MSSEs and organizations to know the best ICT strategy suitable for the enterprise.

In (R. MacGregor et al., 2002; Tarutė & Gatautis, 2014) findings, several barriers to ICT adoption are as follows: lack of ICT skills by the workforce, lower level of existing hardware technologies, inadequate information on ICT benefits and security issues, returns on investment (ROI), resistance to the new change, and preference to orthodox technologies. External barriers constitute social, political, cultural, infrastructure, legal and regulatory barriers (Tarutė & Gatautis, 2014).

The Economic Cooperation and Development (OECD) determined limited human resources, security concerns, lack of awareness, undetermined benefits of ICTs, cost of setup, and pricing concerns as some of the significant challenges facing MSSEs in OECD countries.

According to Consoli, (2012); Tarutė & Gatautis, (2014), MSSE owners do not capitalize on the prospective benefit of ICT as compared to medium and large enterprises as a result of inadequate resources, and capacity of these MSSEs. The shortfall in ICT skill development and limited financial resource experienced in MSSEs compared to large enterprises have more impact on MSSEs than large organizations, thus limiting the capacity of MSSE owners to create and sustain competitive advantage (Okundaye, 2016; Tambunan, 2011). The above limitations have been noteworthy challenges enterprises and organizations face as it exposes them to the distress of the effect of the limiting factors that however affect their business size (Consoli, 2012).

As indicated by academic scholars about the challenges developing countries' MSSEs face in adopting ICT, a peculiar hindering factor was the ability of customers and vendors to integrate e-commerce into their business operations (R. C. MacGregor & Kartiwi, 2010). Several MSSE owners in developing countries were not confident about e-commerce suiting their service

production or however were not too certain how it could be integrated into the running of their day-to-day activities (R. C. MacGregor & Kartiwi, 2010).

In Botswana, a study by Mutula & van Brakel, (2006), studied the e-readiness of MSSEs in the ICT sector. The study found that the government plays a critical role in encouraging MSSEs to adopt ICTs. ICT growth in the study area is low due to the lack of guarantees associated with the technologies (Mutula & van Brakel, 2006). The research recommended the government should help to solve the problem by developing ICT infrastructure and reforming ICT legislation. The study identified security as the primary challenge to the adoption of ICT by MSSEs in Botswana (Mutula & van Brakel, 2006).

A study conducted in urban Kenya proved a better rollout of electronic commerce implementation by MSSE owners because they had visible benefits resulting from ICT use (Wanyoike et al., 2012). Some benefits witnessed included the simplification of work patterns, effective and efficient communication and proper and effective coordination between the value chain, improved customer services which affected customer satisfaction positively, and increased productivity (Wanyoike et al., 2012). Owners of MSSEs perceived ICT to expand their avenue for global market reach (Wanyoike et al., 2012).

However, the MSSE owners/managers did not consider ICT to have the capacity to aid in developing new products and services (Wanyoike et al., 2012), this may perhaps explain the reason MSSE owners use basic ICTs such as phones, faxing machines, printing machines, document processing software. Apulu and O. Ige, (2011), identified that ICTs were not used for high advanced functions such as planning, analysis, and decision making. MSSE owners in developing countries would have to tackle the challenge of poor/lack of awareness of ICT benefits else the adoption of ICT will remain very low.

In Ghana, a study by Akomea-Bonsu & Sampong, (2012) conducted in Kumasi on the impact of ICT on the metropolis, its findings provided insights on barriers faced by the MSSEs in adopting ICT. The results of the study showed a small number of MSSEs in Kumasi were aware of the potential benefits of ICT adoption. Though most of the MSSEs reported positive performance lack of financial support, internal capabilities, lack and non-availability of infrastructure and some personal reasons were the barriers identified by the researcher (Akomea-Bonsu & Sampong, 2012).

Another study affirmed the similar challenges faced by MSSEs in Ghana. Agboh, (2015) study results showed the lack of internal capabilities, poor infrastructure, high cost, financial constraints, lack of information on suitable ICT solutions, and lack of time to implement these ICTs in their business operations.

In developing countries of which Ghana is inclusive, a common theme identified in the literature thus lacks the necessary knowledge and information to effectively and efficiently adopt and use the ICT in the running of the day-to-day MSSE operations. Required information for decision-making on the adoption of ICT is reliant on quality data which is not available to access in the case of Ghana.

2.10 Empirical study

ICT has spurred economic growth and improved the lives of people all over the world by providing new opportunities for people to earn a living (Napitupulu et al., 2018). A favourable association has been shown between ICT development and GDP per capita growth in empirical studies (Asongu and Le, 2017). Poverty reduction, job creation, money generation, and the formation of an atmosphere conducive to socioeconomic growth are all social benefits of ICT, particularly for developing nations (Yunis et al., 2017). MSSE leaders that adopt ICT create growth prospects for

MSSEs which in turn delivers socioeconomic benefits within developing nations (Napitupulu et al., 2018; Yunis et al., 2017).

MSSEs have been found to gain more from ICT adoption than large enterprises (Cataldo et al., 2019) because IT-induced competitiveness fades as larger enterprises grow and compete in more competitive markets (Cataldo et al., 2019). Since small businesses have a simple structure, lower coordination and communication cost, resulting in higher predicted revenues from ICT adoption. The importance of ICT adoption for MSSEs development has been verified in recent studies. According to Albar and Hoque (2019), IT aids MSSEs in increasing competitiveness, lowering transaction costs, increasing sales, expanding enterprise networks, and fostering integration. According to Cataldo et al. (2019), MSSEs can diversify their products and services whiles increasing profits by implementing IT.

According to a survey carried out by ResearchICTAfrica (RIA) in 14 African countries, ICTs are productive input factors for both formal and informal small and medium-sized enterprises (SMEs). The use of ICTs has been found to increase labor productivity in these businesses.The survey found that mobile phones have become the primary communication tool for SMEs, with demand for fixed-line phones decreasing due to their expense or unavailability in certain areas. However, there is still some demand for fixed-line phones among SMEs. The use of ICTs in SMEs has been found to have a positive impact on various aspects of their operations, including customer relations, marketing, and management. The use of ICTs has enabled SMEs to improve their operations, streamline processes, and expand their customer base.

Overall, the survey highlights the importance of ICTs in the success of SMEs in Africa. The use of these technologies can help SMEs overcome various challenges and improve their productivity and profitability (Esselaar et al., 2006).

MSSEs use IT to improve or replace existing information systems and networks, and as a result, they get access to new markets (Setiowati et al., 2015). Furthermore, IT adoption aids coordination and integration activities, resulting in increased organizational efficiency and MSSE engagement in global commerce (Lecerf & Omrani, 2019). IT adoption has also been shown to help MSSEs internationalize and boost their export performance (Lecerf & Omrani, 2019). (Zhang et al., 2008).

MSSE produce valuable goods and services for both consumers and other enterprises which contribute largely to a country's national product. This involves services provided to clients and the selling of items which all amount to the overall export performance. MSSE contribute to the largest enterprises in South Africa and Ghana. They are estimated over 92 per cent of Ghana's enterprises and account for roughly 70% of Ghana's GDP and employment for over 80%. In South Africa, MSSEs consist of 91 per cent of enterprises in South Africa contributing to 52 per cent – 57 per cent of the country's GDP which employs 61 per cent of South Africa's working force (Berry et al., 2002).

In Kumasi, Ghana, Obiri-Yeboah and Odei-Lartey (2013) investigated the factors that influence internet usage among MSSEs. They found that limited access to internet facilities was not a major issue for MSSEs. Concerning ICT adoption drivers, there were strong connections between parameters like age, education, usage experience, and the pattern of internet usage in corporate operations.

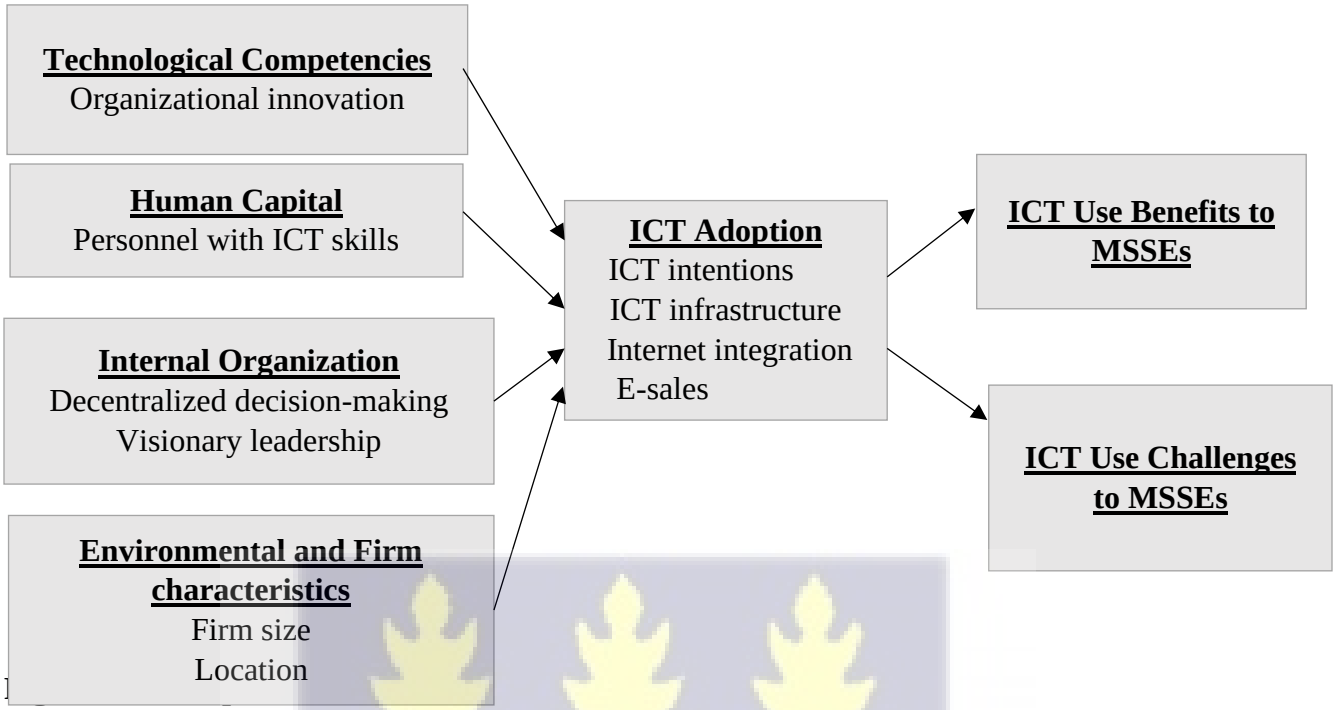
2.11 Conceptual framework

Many theoretical approaches to the adoption of new technologies have been studied (Grandón et al. 2011; Lee and Xia 2006). The review of literature on technology adoption models identifies Technology Acceptance Model (TAM) as an important model particularly applicable to firm-level investigations (Marangunić et al., 2015).

Individual and company qualities connected to technology and organization are highlighted in both models (TAM & IDT) as determinants of innovativeness. The technology, organization, and environment framework also highlights the importance of the environmental context which includes industry, competitors, and government dealings in the process of a company adopting and implementing a technical innovation (Yeh, 2015). The fundamental conceptual model for the study (see Figure 1), is based on the aforementioned theory, and stresses the significance of technology-related elements along with internal organization characteristics in shaping a firm's decision and adoption quality with regard to ICT intentions, ICT infrastructure, internet integration, and e-commerce (e-sales and e-procurement). Significant technology-related elements that are likely to affect adoption decisions and ICT implementation include a firm's technological capabilities, scientific understanding, and ICT skills (Giotopoulos et al., 2017).

Significant enhancements or innovations in the firm's functions, human capital development, and participation in research projects/collaborations are all represented in our analysis as a firm's technological competency, which is expressly tied to ICT adoption. Human capital is a term that refers to a person's scientific education background and the ICT skills of the MSSEs' staff (Olise et al., 2014).

Figure 1 : Conceptual Framework



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section describes the methods used in the study. It includes the study area, study design, study population, sampling technique and sample size, data collection instrument, data collection technique, data analysis, and ethical consideration.

3.2 Study Area

The study was conducted in Nsawam-Adoagyiri Municipality. The Nsawam-Adoagyiri Municipality forms part of the 26 administrative districts situated in the Eastern Region of Ghana. This consists of seven (7) sub-Municipals that is; Adoagyiri, Djankrom, Nsawam, and Panpanso with about 135 communities. The estimated projected population is one hundred and seven thousand, three hundred and two (107,302). The Nsawam-Adoagyiri Municipality, in particular, is estimated to have a population of about 86,000. Nsawam-Adoagyiri Municipality is about 23 kilometres from Accra, Ghana's capital. It has a land area of around 175 square kilometres and is located in the South Eastern section of the Eastern Region between latitude 5.45'N and 5.58'N and longitude 0.07'W and 0.27'W. In terms of spatial interaction, it is bordered on the south by the Greater Accra Region's Ga West and Ga East Municipalities, and on the north by the Akuapem South District. It also shares borders with the Ayensuano District in the north and the Upper West Akim District in the south. The Municipality's proximity to Accra and Tema offers development opportunities. For example, the Accra–Tema conurbation is the country's single largest market, providing a ready market for farm goods and industrial items produced by the Municipality. As a result, the municipality, for example, might concentrate on agricultural growth through market gardening. (Ghana Statistical Service , 2010).

The major economic activity in Nsawam Adoagyiri is agriculture. In the municipality, there are several commercial activities the people indulge in. These include the exportation of mango, pineapple, pawpaw and others. These fruits are also consumed locally. The fruit processing factory in the municipal employs a significant number of youth. There are some MSSEs in the municipality. The industries range from agriculture forestry and fishing (22.5%), manufacturing (13%), stone quarrying (0.4%), artefacts/craftworks production (0.7), human health and social works (1.6%), etc. (Ghana Statistical Service , 2010)

Figure 2: Map of Ghana with study area cirlced

Source: Nsawam Adoagyiri municipal data

3.3 Research Design

The research design adopted for the study was both a quantitative survey and a qualitative approach. The mixed-method approach is deemed an appropriate suitable method for describing characteristics, opinions, and views of the study's targeted population and provides the opportunity for respondents to answer/respond to questions as much as they know.

According to Creswell (2003), mixed methods are best for opened-ended observations and closed-ended measures. The study considered both approaches as the research questions require real-life depth understanding which a quantitative approach cannot capture. This approach is appropriate as it mitigates the weakness of any single approach

3.4 Source of data

The data for the study was made up of both primary and secondary data. The primary data were taken from the MSSEs and the secondary data were taken from registered MSSEs under the Business Advisory Centre. At the time the study was conducted, the municipal assembly had 773 MSSE registered at the Business Advisory Centre.

3.5 Population

This research work would solely be derived from MSSEs registered with the Business Advisory Centre operating within Nsawam-Adoagyiri Municipality. The population was divided into two groups; micro and small-scale enterprises. Micro and small-scale enterprise were defined by their number of employees. According to (Ghana Statistical Service , 2010) and the NBSSI employees below 6 are regarded as micro-scale enterprises and between 6 to 30 is considered as small scale enterprise. The majority of the respondents were into selling agricultural produce, digital printing, provision shops, pharmacies, head porters, textiles, building and construction etc.

3.6 Sample and Sampling Technique

Due to the nature of the secondary data provided by the municipality, the study employed a simple random sampling technique. With the sampling frame of MSSEs registered with the Business Advisory Centre operating within Nsawam-Adoagyiri Municipality, the researcher randomly selected some MSSEs to be included in the study. This technique was chosen in order to give all MSSEs an equal chance to be included in the study.

A sample size formula formulated by Yamane (1967) would be employed in determining the sample size of the population. Thus:

$$n = \frac{N}{1 + N\ell^2}$$

n = is the required sample size.

N = the population size

ℓ = Tolerable error

Where N= 665, tolerable error = 0.05

n= 665/1+665(0.05^2)

n=**249.76** (2. d.p)

The approximately estimated sample size for the study was **250.**

3.6.1 Simple random sampling technique

The defined population: The secondary data collected from the Business Advisory Centre in the study area had 665 resgistered enterprises that employed between 1-30 which could be classified within the MSSE study definition

Determination of the sample size: The study needed 250 respondents as the sample size , however, out of the total (773) registered enterprises obtained, 47 of the enterprises had less than 6 employees (micro enterprise) and therefore all 47 enterprises where taken out of the larger (773)

population. This is to note that out of the 773 total registered enterprises, 108 were taken out because they had above 30 employees and were considered as large enterprises. For the selection of the 203 sample population (small enterprise) , numbers were assigned to the 618 population left after the the micro enterprise population were taken out. A random number generator application was used in auto-selecting the numbered enterprises. In the application, the maximum value was set at 618.

The use of the random number generator drew out the 203 sample size from the population by giving all numbered population an equal chance of being selected.

By using a simple random technique, every enterprise in the population had an equal chance of being selected, which helped to ensure that the sample was a representative of the population.

For the selection of the 10 interviewers for the study, 5 respondents were taken from the 47 respondents and 5 from the 203 respondents obtained. The same simple random strategy that was used in obtaining 203 respondents was employed for both stratas thus 5 respondents for mico enterprises and 5 for small scale enterprises to get the 10 interviews.

Table 1 : Research design summary

Variables	Quantitaive (Survey)	Qualitative (Interiview)
Method Instrument	Questionaire	Interview guide (Call interview)
Sample Size	250	10
Sample technique	Simple random	Simple random
Male respondents	117	3
Female respondents	133	7
Micro Enterprise	47	5
Small Enterprise	203	5

3.7 Inclusion and Exclusion criteria

From the secondary data taken from the Business Advisory Centre at the municipal, MSSEs that had above 30 employees were classified as large and hence were excluded from the sample. Only MSSEs that employed between 1-30 employees were considered. The sampled population of 250 were grouped into two groups, micro and small-scale enterprises. In the secondary data, only 47 enterprises could be classified as micro hence all 47 were considered because the total number of micro-enterprise representations in the dataset was trivial and therefore applying the sampling technique would not show a good representation of the micro group. However, the remaining 203 (small-scale enterprises) were derived by applying a simple random sampling technique to the total population.

With respect to the call interview, 5 micro-enterprises and 5 small enterprises were chosen among the sample size for the interview. The researcher selected the respondents using simple random sampling. The selection of the call interview was convenient for the researcher because the respondents' businesses were sparsely distributed and were difficult reaching them for face-to-face interviews.

3.8 Data Collection Instrument

In gathering the study data, a mixed method of design thus qualitative and quantitative was used to capture both numeric and text information. The key instrument adopted in the collection of data for the study was the questionnaire. An open-ended and closed-ended questionnaire structure was adopted. Questionnaires were primarily administered by the researcher to the respondents. The various sections within the questionnaire included; demographics, adoption and level of usage of ICT by MSSEs, benefits of ICT adoption and challenges MSSEs face in adopting ICT. In addition,

a structured interview guide was used to conduct a call interview for 10 MSSE respondents. It was estimated that each question would be answered within half a minute so, in total, each respondent spent about 30 minutes on average answering the questionnaire and 45 minutes answering the interview questions.

3.9 Data Collection Procedure

The data for this study was collected from MSSEs within the study area. Permission was sought from the managers of the various MSSEs before the data collection. The procedure was then explained to them, and MSSEs who are readily available and willing to participate in the study were given the questionnaire and assisted to complete them. The mothers were met individually and the questionnaire was handed to them personally to answer. In cases where the participant could not understand a question, the researcher read and interpreted it for them. The completed forms were collected and coded after filling on that same day for analysis. For the interview section, respondents were called over the phone and recorded for transcription. All information gathered was held confidential. The required covid-19 protocols were duly observed, as such, potable water with soap and tissues was made readily available for handwashing, seats provided were 1 meter apart to ensure social distancing, and respondents wore their face masks and hand sanitisers were made available.

3.10 Analytical Method

The Statistical Package for the Social Sciences (SPSS) version 20 tool was used in analyzing the data into bar charts, tables, and other graphical charts and figures. The mean statistics technique was used. To test the relationships between variables, the correlation co-efficient technique was used.

The qualitative data gathered was analyzed using thematic analysis. The in-depth interview is transcribed from a voice recorder and references are made to some MSSE respondents as direct quotes stated to emphasize the point described in the data analysis

3.11 Ethical Considerations

The researcher gave assurances to all respondents that all information provided is confidential and any information provided would not be publicized. In the process of data gathering, the study ensured that the survey was on a voluntary participation basis and no respondent was forced or influenced to participate in the exercise. The Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana provided notice letters before the survey was conducted.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section presents findings from the data gathered for this study. The findings are presented about the research objectives.

4.2 Respondents Characteristics

Table 1 shows the profile of 250 MSSE respondents. All respondents were sole proprietorship businesses. The females consisted of 53.2% of the data gathered from the field. It can be seen that a greater proportion of the respondents were married constituting 62%. This is followed by respondents that were single with 26%, divorced, and separated having 6% respectively. A larger proportion (30.4%) of the respondents fell between the ages between 26 and 35. However, only 9 respondents were 25 years and below. The average age (mean) and the range of the respondents fell to about 45 years and 54 years respectively. A second majority of the age group of the respondents were over 55 years old representing 23.6%. Those who had educational attainment up to junior high school were the least with a percentage of 3.2%. Entrepreneurs with no formal education constituted 53 respondents (21.2%). The second-highest recorded respondents attaining up to secondary and tertiary education had 24% respectively. A greater proportion of the respondents only had primary education (27.6%). Among 250 respondents,(81.2 %) of them employed between 1 – 5 employees.

The study recorded the majority of the respondents having operated their businesses between 1-7 years. Only 33 respondents (least) had operated between the years of 22 and 28. The demographic table shows there were several businesses operated by the sampled respondents in the study area. From the data gathered, the most common business operation was the grocery business (16%)

which was accompanied by crop farming constituting about 15.6%. Despite the emergence of technology in many areas in the country, the electronic business recorded the lowest of about 4.4% of the total respondents.

Table 1 above, shows that 59% of MSSE's earned monthly income between ¢1001-¢5000 where the majority of the respondents fell within that income interval. 37 MSSE respondents were recoded to have earned income of ¢5001-¢10000 every month which formed the second majority. The average (mean) monthly income and range of the 250 MSSE respondents were about ¢5516.80.

Table 2. Demographic characteristics

Demographic characteristics			
Variables		Frequency	Percentage%
Entrepreneur's gender	male	117	46.8%
	female	133	53.2%
	Total	250	100%
Marital status of entrepreneurs	single	65	26.0%
	married	155	62.0%
	divorced	15	6.0%
	separated	15	6.0%
	Total	250	100%
Age Groups	Up to 25	9	3.6%
	26-35	76	30.4%
	36-45	49	19.6%
	46-55	57	22.8%
	over 55	59	23.6%
	Total	250	100%
Highest educational level of entrepreneurs	no formal education	53	21.2%
	primary	69	27.6%
	jhs	8	3.2%
	secondary	60	24.0%
	tertiary	60	24.0%
	Total	250	100%

	Micro-Enterprise	203	81.2%
Number of employees	Small Enterprise	47	18.8%
	Total	250	100.0%
	1-7	71	28.4%
	8-14	49	19.6%
period of enterprise	15-21	50	20.0%
existence	22-28	33	13.2%
	29 and above	47	18.8%
	Total	250	100%
	Groceries	40	16.0%
	Mechanic	16	6.4%
	Electronics	11	4.4%
	Fish Farming	16	6.4%
	Plastics and Cosmetics	18	7.2%
	Catering	21	8.4%
Business description of company/enterprise	Agro-processing	33	13.2%
	Traditional craft	30	12%
	Fashion Designer	26	10.4%
	Crop farming	39	15.6%
	Total	250	100%
	Up to 1000	28	11.2%
	1001-5000	149	59.6%
	5001-10000	37	14.8%
	10001-15000	10	4%
	15001-20000	9	3.6%
Monthly income groups	20001-25000	7	2.8%
	25001-30000	6	2.4%
	30001-35000	3	1.2%
	35001-40000	0	0.0%
	40001-45000	1	0.4%
	Total	250	100%

Demographics

a. Mean Age = 44.76

c. Monthly income mean=5516.80

4.3 Adoption rate and level of usage of ICT by MSSE's

From the field survey, data gathered revealed a hundred per cent (100%) ICT adoption rate by the sampled MSSE's within Nsawam-Adoagyiri municipality. The explanation for this finding was due to all the MSSE entrepreneurs using at least mobile phones in their business operations.

In table 2, it was noticed that 71 respondents who form a greater portion of the MSSE's attested that they incorporated ICT in their business between 1-7 years. The respondents confirmed very few (13.2%) had incorporated ICT between 22 to 28 years. The average and range of ICT incorporation gathered from the sample was about 16.3 years and 28 years. Technology became predominant in Ghana in the last two decades. The average micro and small enterprise adopting ICT for about 16 years shows that MSSEs within the municipality are quick adopters of technology.

Table 3. Duration of ICT incorporation in MSSE

Years	Frequency	Per cent
1-7	71	28.4
8-14	49	19.6
15-21	50	20.0
22-28	33	13.2
29 and above	47	18.8
Total	250	100.0

Source: Field survey 2020

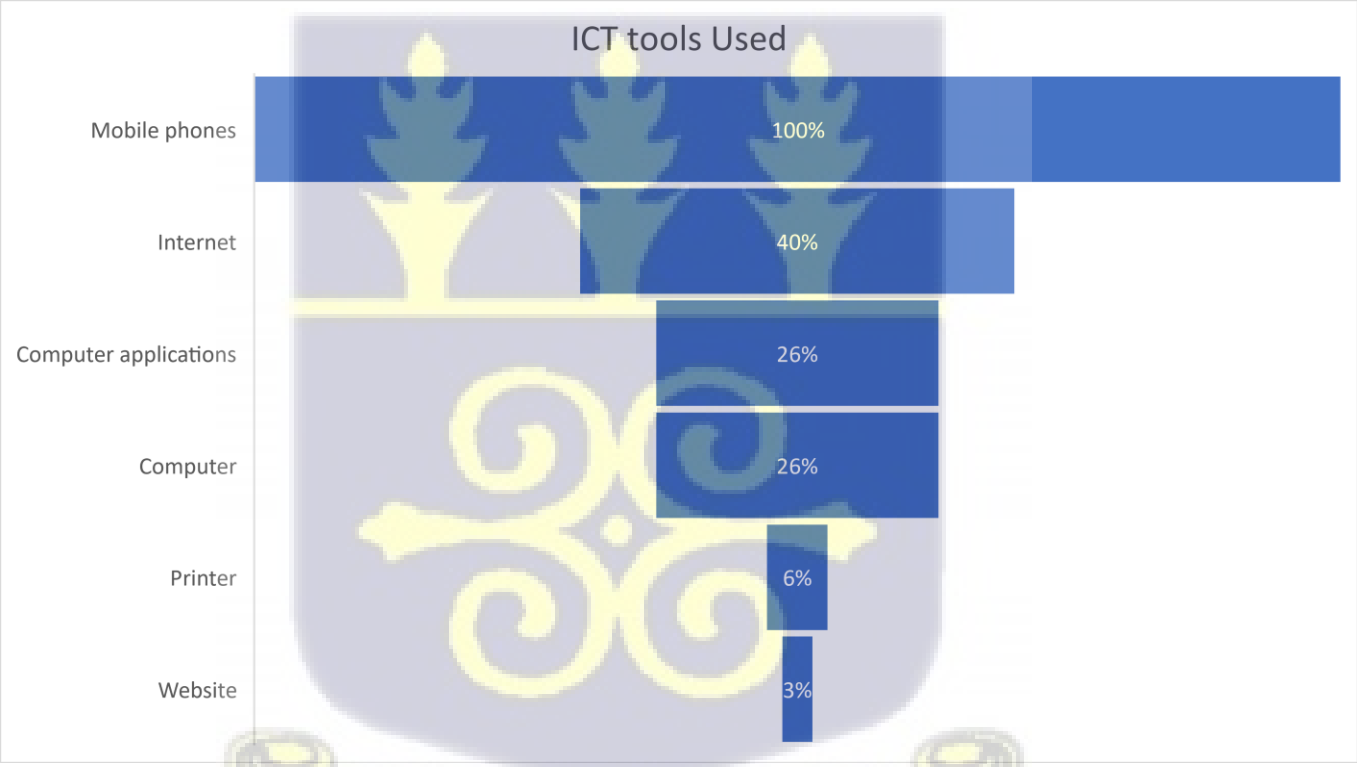
Note :

a. *Mean = 16.3*
b. *Range = 28*

4.4 ICT tools

From figure 3 below, all respondents had adopted mobile phones in their business. On the other hand, the second most used ICT tool was the internet contributing to about 40%. Website usage was recorded the lowest among the sampled population. Mobile phones are now common in modern Ghanaian business operations but that cannot be said for computer usage and its accompanying technologies. Undoubtedly, computer adoption goes in tandem with computer application use and possibly website development

Figure 3: ICT tools used



Source: Field survey 2020

4.4.1 Correlation Matrix between monthly income and ICT tools

From table 3, the Pearson correlation value of 0.252 means the strength of the linear relations between monthly income and computer was weak but had a positive correlation. The significance level value of 0.00 depicts the monthly income and computer are statistically significant. This means as the incomes of entrepreneurs increase it appears that they are more likely to adopt computers into their business. However, the .250 Pearson correlation value means there are minimal strength levels in the linear relations between monthly income and the internet. This implies that as the income of entrepreneurs rises, MSSE businesses are likely to adopt the internet. It can be realized from the results that monthly income correlated positively with the rest of the ICT tools.

Table 4. Correlation Matrix

		Computer	*Internet*	*Website*	*Printer*
	Pearson Correlation	.252**	.250**	.199**	.132*
Monthly income	Sig.	.000	.000	.002	.037
	N	250	250	250	250

*Note: **. Correlation is strongly significant at the 0.01 level*
**. Correlation is significant at the 0.05 level*

4.4.2 Correlation Matrix between demographic characteristics and ICT tools

The results revealed in table 4 appear to have a positive linear relationship between age and ICT tools. Though the strength of the relationships is weak, their significance levels are high. It implies the higher the age of the entrepreneur, the more likely the internet, website, printer, and computer are incorporated into their business. The variations in sex of entrepreneurs are not significant in explaining the relationship that exists between ICT tools, education, and age. The positive linear

relationship between education and the internet is strong and statistically significant. Similarly, there is a positive linear relationship between education and income. The strength of the relationship is high and statistically significant. This means, that as the education of entrepreneurs increases there appears to be an increase in the adoption levels of the internet and computer. The variations in education would affect ICT tool adoption.

Table 5. Correlation Matrix

	Internet	*Website*	*Printer*	*Computer*
Sex	.062	.035	-.019	.029
Sig.	.327	.580	.762	.650
N	250	250	250	250
Age	.054*	.024**	.105**	.078*
Sig.	.040	.000	.000	.031
N	250	250	250	250
Education	.771**	.189**	.248**	.614**
Sig.	.000	.003	.000	.000
N	250	250	250	250

*Note: **. Correlation is strongly significant at the 0.01 level*
**. Correlation is significant at the 0.05 level*

4.5 Factors that determine the choice to adopt ICT among MSSEs

To know what informs the choice of ICT adoption by MSSEs in the study area, respondents rated 10 factors that influence their ICT choice in their business operation. A Likert scale that ranged from *1= Strongly disagree, 2= Disagree, 3= Neutral 4= Agree 5 = Strongly agree* is represented as a score in the figure below. The figure below shows the mean statistics for these variables

From figure 4 below, the majority of the MSSE respondents agreed that customer demands (M=4.636) were a key driver of their choice of ICT in their MSSE operations. The respondents also acknowledged that their choice of ICT was influenced based on operation cost reduction

(M=4.31). It can also be realized from the figure the respondents strongly agreed on ICT improving their customer services (M=4.59). In figure 4, It was clear the respondent agreed their choice of ICT was influenced based on the chances of having higher/increased sales (M=4.26). The respondents highly agreed on a vital factor that influenced their choice of ICT was the ability to increase their internal efficiency (M=4.34).

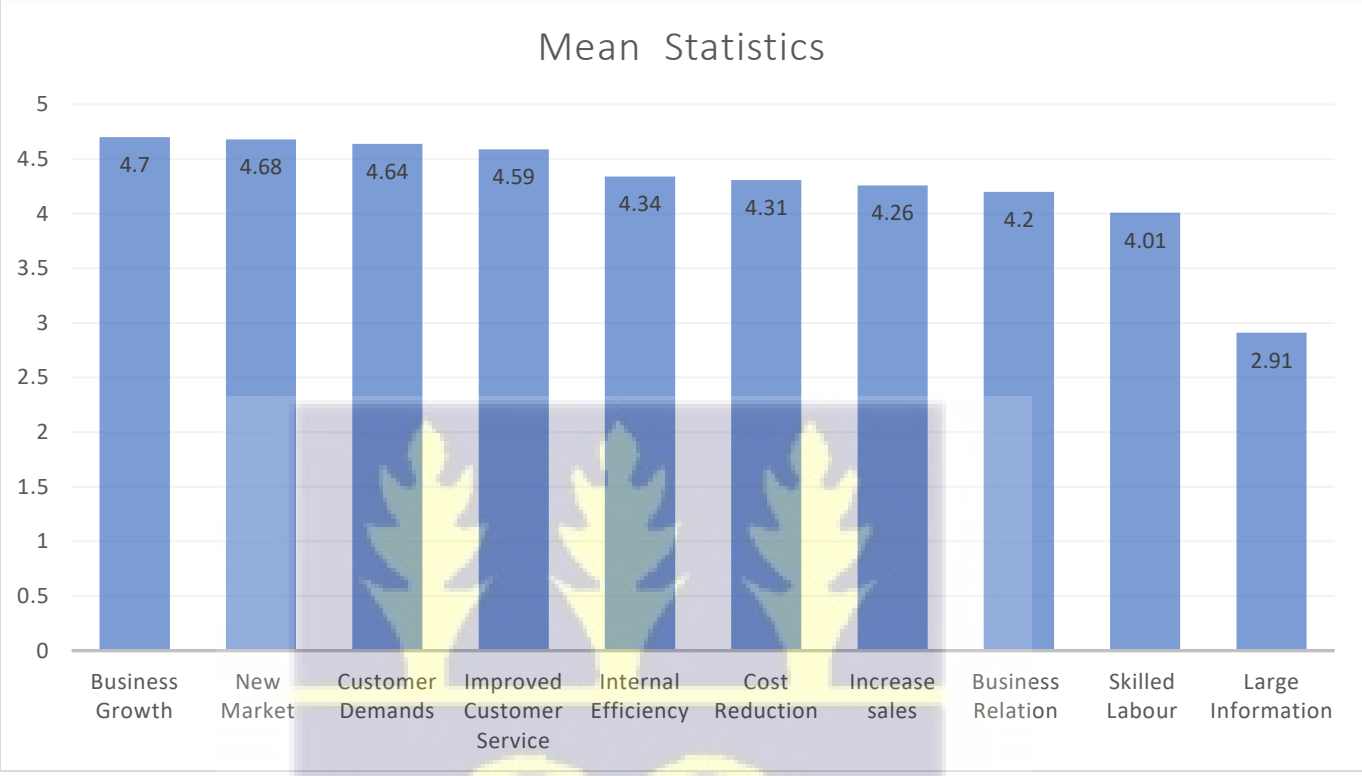
Another ICT choice factor respondents completely agreed on was the possibility of business growth (4.7). Among all the factors in the figure, the business growth factor had the highest score. It was therefore worthy to note that majority of the respondents chose to incorporate ICT in their business to have the opportunity of growing the enterprises they run. The MSSE respondents also agreed their ICT choice was informed based on improving their business relations (M=4.2) with partners. ICT tools are necessary tools needed for communication among enterprise partners thus, producers, suppliers, and consumers. Most of the respondents agreed that because they had skilled labour available, it informed their decision on ICT adoption. It appears using mobile phones did not need any special training, hence all respondents despite their educational levels had adopted mobile phones in their business.

Respondents slightly disagreed that managing large information (M=2.91) influenced their ICT choice. In the figure, the factor thus new market development (M=4.68), the respondents largely agreed that it was a factor in their ICT choice determination. It was the second majority in terms of agreement score.

The factors influencing ICT adoption among MSSEs in the municipality can be categorized into three groups. There appears to be a relationship between business relations, improved customer services, and new market development therefore can be categorized as market development. However, it appears there is a relationship between skilled labour, cost reduction, increased sales,

and business growth and can be all be classified under business growth. The third group consisting of internal efficiency and large information can be categorized as business efficiency.

Figure 4: Mean Statistics for drivers to ICT choice



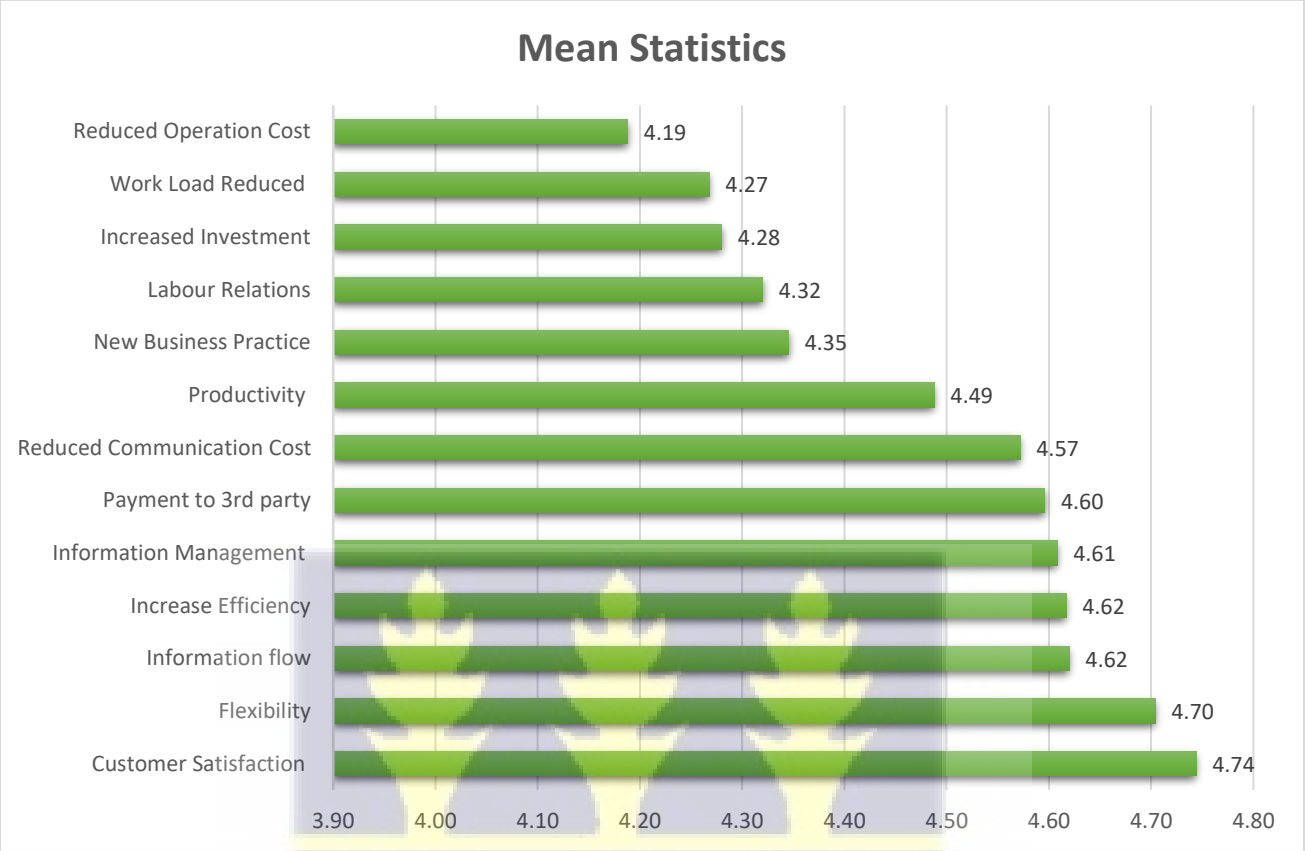
Source: Field survey 2020

4.6 Benefits of ICT adoption

Figure 5 below shows that the MSSE respondents highly agreed on benefiting from ICT as it aided in the facilitation of a quick flow of information within the business from internal and external sources (M=4.62). Access to information and information dissemination is an important factor that contributes to the internal efficiency of the enterprise. A mean of 4.49 was realized from the results as the respondents agreed ICT helped their enterprise increase productivity. The respondents confirmed to ICT reduced their operating costs in running their businesses (M=4.188). However, the fourth-highest mean (M=4.61) was associated with ICT supporting and benefiting enterprises

by improving information and knowledge management. The respondents revealed their business has immensely benefited from ICT in the sharing and learning of new business practices (M=4.345). According to the survey, a greater proportion of the MSSEs agreed ICT had contributed to their operations by increasing their efficiency (M=4.62). The study results also revealed that a large number of respondents used ICTs to facilitate payment to third parties (M=4.60). Most of these enterprises use mobile money as their mode of financial transactions. Digital payments have made business transactions easier and reduced theft risk. On the other hand, the results revealed MSSE respondents agreed that ICT reduces the cost of communication during their business operations. As ICT has changed traditional communication such as post mails to electronic mails, physical human message delivery to telephone calls, and social media, communication has been made simple, fast and less expensive considering time as a cost. Most of the MSSEs responded that they had benefited from ICT as it led to improved customer satisfaction (M=4.74). The results show customer satisfaction had the highest ICT benefit ranking. The majority of the respondents attested to the fact that ICT had led to the flexibility of their business operations (M=4.70). During the coronavirus restrictions, some MSSEs had to adapt to working from home and using ICT such as mobile phones and computers to contact customers for their products to be delivered to their various locations. It is important to note relations that existed between entrepreneurs and customers could impact the business positively or negatively. From the figure, it shows a majority of respondents confirmed ICT had improved their labour/employee relations (M=4.32). The study also revealed a greater proportion of MSSEs admitting ICT had reduced the overall workload of their employees (M=4.27). Finally, from the study result, most respondents agreed they benefited from ICT as it increased their return on investment.

Figure 5: Mean Statistics for ICT benefits



Source: Field survey 2020

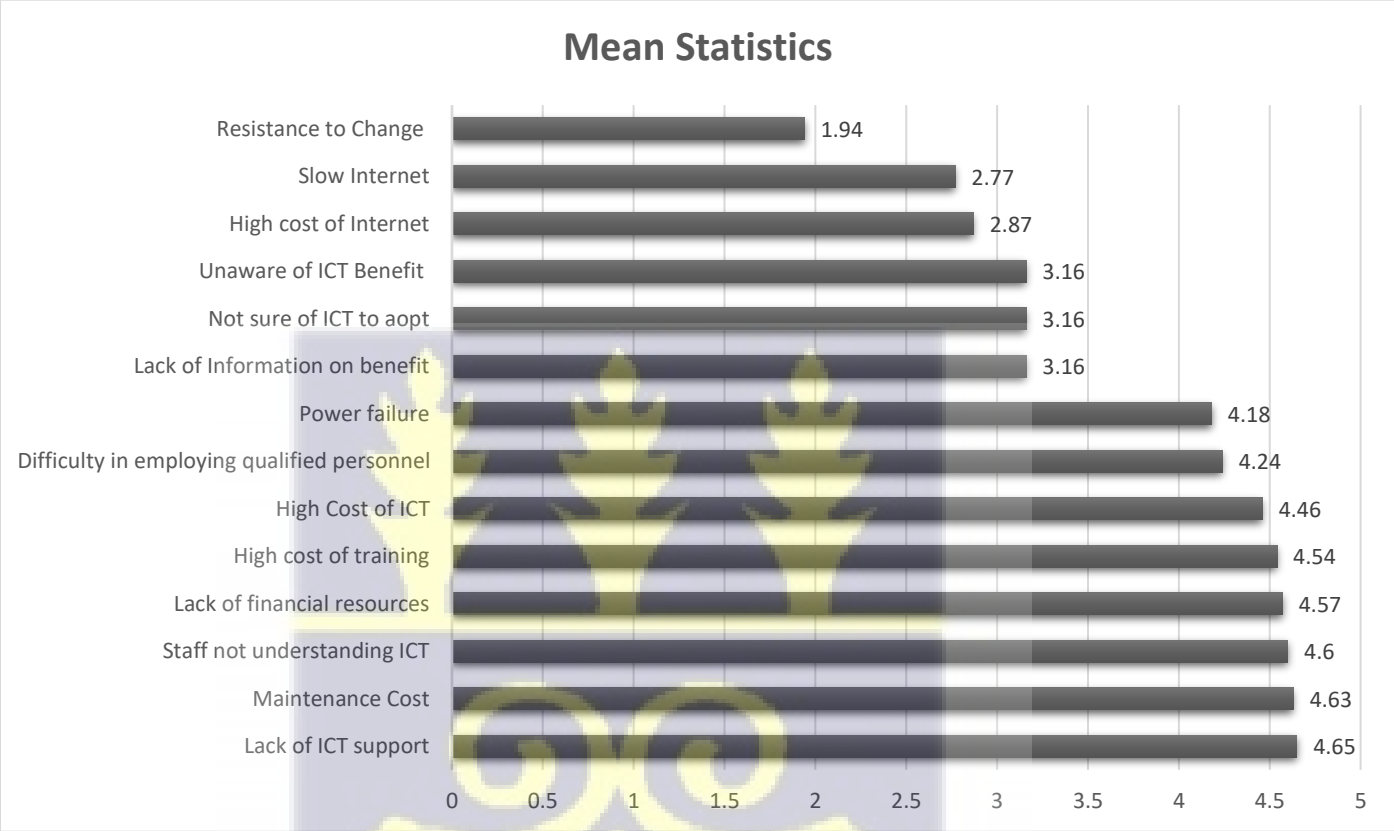
4.7 Challenges/Barriers to ICT adoption in MSSE business

Figure 6 depicts a greater portion of the respondents agreed the cost of ICT was high (M=4.46) and that impeded their ICT adoption in their businesses. Since most of the respondents were sole proprietors and operating micro-enterprises, capital has been a challenge and that has affected their investment. It is evident from the literature that the cost of ICT has been a major challenge faced in the adoption process. However, the survey, shows the respondents disagreed that the cost of the internet (M=2.87) became a barrier to their ICT adoption. A mean of 2.77 was recorded for slow internet which means many of the respondents disagreed slow internet was a challenge encountered in their ICT adoption process. It was also revealed that the respondents agreed to lack

of ICT support (M=4.65) as a major challenge faced in the adoption process. From the study, it recorded the highest mean score compared to other barriers. MSSEs need support from the national and municipal levels in areas of ICT training and skill development. Most of the MSSEs in the municipality formed part of the informal sector and had inadequate ICT knowledge. The majority of the enterprise respondents highly agreed that their staff did not understand the use of ICT (M=4.6). This implies many employees in these enterprises need ICT training to be able to use ICT tools. The respondents agreed to the challenge of being unaware of the benefits (M=3.16) associated with ICT as very moderate. As can be proven from the figure 6 that the high cost of ICT was a challenge, it can be seen that the cost of maintenance of the ICTs (M=4.63) is also a barrier to the adoption of ICT as many of the respondents agreed to. Since all respondents were sole proprietorship operators with the majority falling under micro-enterprise, they faced capital or financial challenge in their business operations. A large portion of the respondents agreed to inadequate/lack of financial resources (M=4.57) because they could not purchase some required ICTs that would boost their businesses. A larger number of respondents agreed that they faced the challenge of frequent power failure (M=4.18). Power failures damaged the majority of their ICT and as discussed above the cost of these ICTs and their maintenance were very expensive. A mean of 4.24 was realized as MSSEs agreed they faced a challenge in employing qualified personnel capable of operating enterprise ICTs such as computers, websites, and printers. This was because it was highly costly employing people with ICTs skills. The respondents had slightly above avergage consideration of whether they were sure of what ICT to adopt (M=3.16). The majority of the respondents disagreed they faced challenges of resistance to change (M=1.94) in their business style. This implies the majority of the MSSEs were willing to embrace a technological type of enterprise operation. The high cost of training (4.54) was identified by the respondents as

a challenge they encountered during their ICT adoption. The respondents confirmed they face moderately the challenge of them having inadequate/lacking information on the benefits of adopting ICT tools in the business.

Figure 6: Mean Statistics for ICT barriers



Source: Field survey 2020

4.7.1 Correlation analysis of demographic characteristics of respondents and challenges of ICT adoption.

Table 5 shows that education has a negative relationship with the high cost of ICT. It recorded a significance value of .030, which is statistically significant. On the other hand, there were negative coefficient values between education and these challenges (Lack of ICT support, lack of financial resources, and high cost of training). This implies that as the level of education increases, there

appears to be a decrease in the cost of ICT, lack of ICT support, lack of financial resources, and high ICT training. The sex variable was recorded into a dummy variable. The variations in sex of an entrepreneur are not significant in explaining the barrier variables. It was noted from the results that as the age of entrepreneurs increases, there appears to be an increase in unawareness of ICT benefits and maintenance costs.

Table 6. Correlation Matrix

	High of cost ICT	*Lack of ICT support*	*Maintenance of cost*	*Lack of financial resources*	*Unaware of ICT benefit*	*High cost of training*
Sex	-.044	-.104	.032	.172	.082	-.117
Sig.	.147	.931	.611	.607	.197	.094
N	250	250	250	250	250	250
Age	.006	.051	.007*	.046	.058*	.024
Sig.	.921	.425	.033	.732	.045	.704
N	250	250	250	250	250	250
Education	-.103*	-.087*	-.005	-.057*	-.012	-.029*
Sig.	.030	.022	.943	.021	.129	.034
N	250	250	250	250	250	250

*Note: **. Correlation is strongly significant at the 0.01 level*
**. Correlation is significant at the 0.05 level*

4.8 Discussion

Businesses ensure that they are highly effective and efficient when undertaking an internal operation to maximum output realization. They adopt ICT to simplify, quicken, and provide higher standards in their daily duties. ICT in contemporary times is used to monitor and assess employees on their performance. ICT has slowed the traditional communication system with the introduction of a faster and less costly method for communication. The study seeks to assess the benefits and

challenges of Information Communication Technology adoption in Micro and Small enterprises in Nsawam-Adoagyiri Municipality.

It was found that all respondents were sole proprietorship businesses. The females (53.2%) were found to be more than the males and 79.8% of them had at least primary education. The study found a hundred per cent (100%) ICT adoption rate by the sampled MSSEs within Nsawam-Adoagyiri municipality. This may be since MSSE entrepreneurs used at least a mobile phone in their business operations (Sianjase & Libati, 2016). This is in line with a survey conducted in Namibia, which found that the cell phone is the most commonly utilised communication tool among MSSEs (Chiware and Dick, 2008). Even though Africans are embracing ICTs, the progress is slow in terms of economic and social development (Kayisire and Wei, 2016). To throw more light, the interview with MSSE respondent 3 on how ICT has positively affected her business explained that " *Mobile phone makes it easier for me to contact my suppliers and deliveries to my clients have been much simpler. I have an SMS system that thanks customers after visiting this pharmacy".* MSSE respondent 7 also mentioned in the interview that " *I can contact all my clients and suppliers. I do not need to go to the factory to know bottles for drinks are ready. I place a call through and everything is sorted out. All I have to do next is to do the payment via mobile money transfer and goods are delivered to me.*

This indicates that MSSE prefers to use a mobile phone because it is much easier to use as it provides an avenue for its users to contact key business stakeholders. The mobile device has lessened the stress customers and suppliers face in delivering products. All respondents were sole proprietorship businesses.

To create and implement effective policies, policymakers must have enough information. They must also understand the factors that influence company decisions on ICT adoption (Giotopoulos

et al., 2017). ICTs are valuable when it comes to creating customer interactions and exchanging knowledge, but few individuals consider the conditions that make ICT adoption and use easier (Chinedu, 2013). The ICT tools identified to have been adopted by the respondents include a mobile phone, internet, computer applications, computer, printer and website. This finding is similar to a study in Kumasi, Ghana which found that MSSEs were using basic office automation systems (Akomea-Bonsu and Sampong, 2012) and in Kenya which listed the commonly used ICT tools to include mobile phones used for texting, voice mails, and the internet (Mokaya, 2012). It was also seen that age and educational level of respondents significantly correlated with the adoption of the ICT tools. The socio-economic and technological characteristics of ICT adoption are essential factors that influence its adoption (Macgregor and Vrazalic, 2005).

The study again found that the majority of the MSSE respondents agreed that customer demand was the key driver to their choice of ICT in their MSSE operations. In the business world, meeting customer demands is vital to business sustainability. In a competitive market, businesses can be more productive if the needs of the customers are met, and the higher the demand the higher the chances of profit maximization (Tarute and Gatautis, 2013). In the interview with MSSE respondent 6, she confirmed that the reason for adopting ICT was because it was vital to reaching customer demands. She mentioned that *"I run a printing press. ICT is vital to my service delivery. I had to purchase advanced ICT last year as customers demand high-quality in printed documents. All industry players are equipping up and very necessary I meet up to standards".* The statement shows the industry customer demands and the urgency in satisfying customers to maximise profits. The other factors driving the adoption of ICT in MSSE in the municipality includes business growth, new market, improved customer services, internal efficiency, cost reduction, increased sales, business relations, skilled labour and large information. Overall, in both developing and

established countries, the following primary drivers for ICT adoption have been identified: perceived benefits and increased sales (Dubelaar et al., 2005; Scupola, 2009), and improved customer services (Scupola 2009; Osmonbekov, 2010; Tan et al., 2010).

The study furthermore identified that the MSSE respondents highly indicated their benefits from ICT to include; customer satisfaction, flexibility, information flow, increase efficiency, information management, payment 3rd party, reduced communication cost, productivity, new business practices, labour relation, increased investment, workload reduced and reduced operation cost. This finding is supported by Agboh (2015) and Juniarti & Omar (2021). Leaders who have adopted and utilised ICT have assisted their companies in being more efficient, effective, innovative, and globally competitive (Consoli, 2012; Jones et al., 2014; Tarut & Gatautis, 2014). Similarly, MSSEs' access to information, communication, and process and market efficiency improved as a result of ICT adoption and utilisation (Mustafa, 2015). During an interview with MSSE respondent 3, she revealed that *" In this supermart, I used to keep my stock records in a notebook and that was very difficult to balance off my books to know outstanding stocks. I contacted a friend who runs a similar business in Accra. She introduced me to a computer application for my stock keeping. Since then I have had no problem with balancing my stock accounts."* This statement confirms that ICT has significantly improved the respondent's information management and increased the efficiency of its business operations.

MSSEs encounter several problems and barriers during the adoption and usage phase, making it difficult to successfully integrate. Lack of ICT support, maintenance cost, staff not understanding ICT, lack of financial resources, high cost of training, high cost of ICT, difficulty in employing qualified personnel, power failure, lack of benefit information, not sure of what ICT to adopt, high cost of internet, slow internet and resistance to change are some of the primary challenges. This

finding is consistent with that of (Tarutė & Gatautis, 2014). Similarly, the study's finding are similar to a study conducted in Ghana which revealed a lack of internal competencies, insufficient infrastructure, high costs, budgetary restrictions, a lack of information on appropriate ICT solutions, and a lack of time to apply these ICTs in their business operations as challenges faced by MSSEs (Agboh, 2015). In this study, the respondents voiced certain challenges they face in ICT adoption. MSSE respondent 4 emphatically stated that *" My business is now growing. I can only afford to buy a mobile phone for now. I need a laptop and internet service but they are too expensive for me now".* MSSE respondent 7 also said *" I am not even too familiar with the new apps on my mobile phone. How then would I be able to incorporate other high technologies like laptops and printers? I know they would help my business if I could get some form of ICT training I would have quickly adopted them for business growth.* From the statements, it is evident that despite MSSE realizing the importance of these technologies, the high cost of these ICT has significantly affected ICT incorporation in businesses. It is important to note that, the willingness to accept new technology is an essential driver of ICT incorporation in businesses. The simplicity of using mobile phones is a contributing factor to its high adoption in the municipality. MSSE respondents need technical training to use sophisticated ICT for future adoption.

It was noticed that there was a negative significant correlation between education and these challenges (Lack of ICT support, lack of financial resources, and high cost of training). This implies that as the level of education increases, there appears to be a decrease in the cost of ICT, lack of ICT support, lack of financial resources, and high ICT training. Other studies reported that poor education reflects in the number of challenges faced by MSSEs (Awiagah et al., 2015; Rahayu and Day, 2017; Zafar and Mustafa, 2017).

On the other hand, as the age of entrepreneurs increases, there appears to be an increase in unawareness of ICT benefits and maintenance costs. This finding from the analysis is not surprising because older entrepreneurs found it challenging adopting to basic and complex ICTs, lacked knowledge of ICT benefits and those that had adopted one did not have higher ICT skills in operating them. Less knowledge and skill in ICT tool usage results in technology damage and hereby incurs an additional cost in repairing them (Garg, 2016).

CHAPTER FIVE

SUMMARY OF FINDINGS,CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Summary of findings

In this study, the objectives of the study were: (1) to know the level of ICT adoption in MSSE operations? (2) To find out how ICT has positively affected MSSEs? (3) To identify the challenges MSSEs face in their quest to efficiently adopt ICT in their daily business operation.

The primary data was gathered from some selected micro and small enterprise entrepreneurs in the municipality. The respondents were entrepreneurs operating a business that employed between 1-5 employees categorized as a micro enterprise and 6 – 30 employees categorized as a small enterprise. A variety of business descriptions was captured in the study.

The study drew a sample of 250 entrepreneurs as respondents using Yamane's sample size calculation. The secondary data of registered MSSEs under the assembly Business Advisory Centre was sourced. The data were grouped into two strata i.e. micro-enterprises and small enterprises. From the secondary data, only 47 business fell within the category of the small enterprise, hence all 47 was chosen. For the remaining micro-enterprises in the secondary data, simple random sampling was used to determine 203 micro-enterprise respondents. A self-administered questionnaire was used in the survey. A structured interview guide was used to interview 5 micro-entrepreneurs and 5 small scale entrepreneurs to gain in-depth opinions on ICT adoption, and the benefits and challenges they face on regular basis.

5.3 Conclusions

Adoption and level of usage of ICT by MSSEs

The study revealed a hundred per cent (100%) ICT adoption rate by MSSEs in the municipality

because all the MSSEs used mobile phones in operating their businesses. Its study found that the majority of the MSSEs had incorporated ICT in their MSSEs between 1-7 years and the average years for ICT incorporation by MSSEs in the municipality was about 16 years. Internet was second highest with computers and its applications forming the third largest ICT used. However, website usage was the least used by MSSEs. It was seen that MSSEs in Nsawam had adopted at least 2 ICT tools in their business operations. The study also revealed that as the income levels of the entrepreneurs increased there appeared to be an increase in their level of ICT adoption. The study captured what drives the adoption of ICT by MSSEs. It was seen that business growth was the major factor that drove their choice to adopt ICT, followed by a greater number agreeing that customer demands, improving services delivered, new market development, cost reduction, increased sales, internal efficiency, improving business relations and the availability of skilled labour as a contributing factor to their ICT adoption choice. It was realized from the study that, MSSEs fairly adopted ICT based on managing large information. The outcome of the study shows that an increase in the level of education of entrepreneurs increased their ICT tool adoption.

Benefits of ICT adoption

The results of the study confirmed MSSEs in the municipality benefited largely from ICT adoption. It was found that MSSEs agreed that customer satisfaction was the major benefit derived from ICT use. The flexibility/adaptability of organizational activities came up second to customer satisfaction. Other benefits of ICT adoption by MSSEs that reached higher agreement levels were the easy facilitation of quick flow of information within the business from internal and external sources, increased productivity in business processes, reduced communication cost, improved labor relation, sharing and learning of new business practices, facilitation of payments to third parties, improvement of information and knowledge management, increased efficiency, and

increase efficiency in business operations. Despite reduced operating costs in running the business and workload reduction were also acknowledged by MSSEs as the benefit gained from ICT, however, it recorded the least agreement levels.

Challenges/Barriers to ICT adoption in MSSE business

The results suggested the Nsawam MSSEs agreed to the lack of ICT support as the major challenge faced in their adoption process. This was followed by the maintenance of ICT, staff not understanding the use of ICT, lack of financial resources, and the high cost of training. Another interesting finding was MSSEs acknowledging they face frequent power failure which damages their ICT devices. The challenge of MSSE entrepreneurs finding difficulty in hiring qualified personnel was discovered. Challenges such as entrepreneurs' unawareness of ICT benefits, entrepreneurs not being sure of what ICT to adopt, and lack of information on ICT benefits all had a very moderate impact on the ICT adoption process in their businesses. The majority of the 250 respondents disagreed with facing challenges of resistance to change, high cost of internet, and slow internet. It was seen that as the age of the entrepreneur increases the more likely they face the challenge of being unaware of ICT benefit and ICT tool maintenance. It was noted from the results that as the education of the entrepreneurs' increases there appeared to be a decrease in challenges such as high cost of ICT, lack of ICT support, lack of financial resources, and high cost of ICT training.

5.4 Recommendations

- Create an enabling environment: The government can create an enabling environment that supports the adoption of ICT by MSSEs. This can include providing tax incentives for ICT investments, creating ICT business incubators, and simplifying the process of registering and licensing businesses.

- Provide training and education: Many MSSE lack the necessary knowledge and skills to effectively adopt and use ICT. Providing training and education on basic computer skills and digital literacy can enhance the adoption and use of ICT in their businesses. The government, private sector, and non-governmental organizations (NGOs) can provide this training. It is important to provide training centres and programmes that will equip MSSEs with knowledge of ICT. The government should assist MSSEs by providing them financial assistance to help them procure the necessary ICT tools they need for their businesses. The government should seek to improve technology infrastructures such as telecommunication systems, power systems etc. needed for ICT usage.
- Foster collaboration and networking: Collaboration and networking among businesses can help overcome the challenges of ICT adoption. Organizations can create platforms where business owners can come together to share knowledge, experiences, and ideas on how to effectively adopt ICT tools.
- For further studies, researchers could focus on undertaking a study that focuses on mobile money transfer system adaptation, and its impact on enterprises within the municipality.
- In addition, researchers could undertake a full-scale qualitative study to seek to understand the perceptions of MSSE on ICT adoption and adaption. Other studies could also investigate attitudes and the cultural influences on MSSE's technology adoption

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APPENDIX B – SURVEY INSTRUMENT

QUESTIONNAIRE DESIGN

Benefits And Challenges Of Information And Communication Technology (ICT) Adoption On Micro And Small Scale Enterprises In Nsawam Adoagyiri Municipality

Dear Sir/Madam,

You are been chosen to be a respondent for the above-titled study conducted as a partial satisfactory for the attainment of a Master's degree in Development Studies from the University of Ghana. Information gathered is highly confidential and information will be used only for academic purposes. I plead with you to provide accurate answers to the questions for quality research to be undertaken. Your co-operation will be cherished.

DEMOGRAPHICS

Please tick and fill the spaces provided

1. Entrepreneur's Sex: 1. Male : ( ) 2. Female: ( )
2. Entrepreneur's Age ……
3. Highest level of education: 1. No formal Education ( ) 2. Primary Educational Education ( ) 3. Junior High ( ) 4.Secondary ( ) 5. University /Polytechnic ( ) 6. Others (……)
4. Marital status: 1. Single ( ) 2. Married ( ) 3. Divorced ( ) 4. Separated ( ) 5. Other (……)

5. Nature of business ownership 1. Sole proprietorship ( ) 2.Partnership ( ) 3. Private limited company ( )
6. Business description of Company: (……..).
7. Number of employees: ……..
8. Where is the business located ……..
9. Period of operation or in existence in Ghana: ……..
10. How much income does the business generate monthly ……

SECTION A: ADOPTION AND LEVEL OF USAGE OF ICT BY MSSE

11. Do you use ICT: 1. Yes ( ) 2. ( )
12. If yes, how long have you incorporated ICT into your business?

……

13. Do you have access to: 1. Electricity ( ) 2. Internet connectivity ( ) 3. Mobile network ( ) others ……..

ICT tools used in business

What ICT tools are you using in your Enterprise? Please tick as many as apply

	ICT tools and usage	✓
13	Computer applications	

14	Computer	
15	Fax	
16	Printer	
17	Photocopier	
18	Mobile phones	
19	Internet connection	
20	Website	
21	Telephone (land lines)	
22	Telex	
23	Scanner	
24	Enterprise Software	
25	Typewriter	

26. Others (please specify_____

Which of the following factors determine your choice to adopt ICTs in your enterprise? Use a 5 scale rating where (**1**= strongly agree, **2**=Agree, **3**=Neutral, **4**= Disagree, **5**= Strongly Disagree). Please tick as many as apply

	Drivers	**1**	**2**	**3**	**4**	**5**
27	Customer demands	1	2	3	4	5
28	Reduction in production cost	1	2	3	4	5
29	Improving services rendered to customers	1	2	3	4	5
30	Increasing the production sales	1	2	3	4	5
31	Improving the internal efficiency	1	2	3	4	5
32	Business growth facilitation	1	2	3	4	5
33	Improving relations among business partners and stakeholders	1	2	3	4	5
34	Access to skilled manpower	1	2	3	4	5
35	Large information management	1	2	3	4	5
36	Developing new markets	1	2	3	4	5

37. Others (Please specify) ----------

SECTION B: BENEFIT OF ICT ADOPTION

What benefits do your enterprise gain from ICT adoption using a 5 point scale of (**1**=Strongly agree, **2**=Agree, **3**=Neutral **4**=Disagree **5**= Strongly disagree). Please tick as many as apply

	Benefits	**1**	**2**	**3**	**4**	**5**
38	Easy information flow within business from both external and internal sources	1	2	3	4	5
39	Increased productivity	1	2	3	4	5
40	Reduction in operation cost	1	2	3	4	5
41	Improved knowledge and information management	1	2	3	4	5
42	Learning or exploring new business practices	1	2	3	4	5
43	Increased efficiency	1	2	3	4	5
44	Easy facilitation of payment to business partners	1	2	3	4	5
45	Reduced cost of communication	1	2	3	4	5
46	Higher customer satisfaction	1	2	3	4	5
47	Reduction of the overall workload of employees	1	2	3	4	5
48	Flexibility/adaptability of organizational activities	1	2	3	4	5
49	Improvement in labor/employee relations	1	2	3	4	5
50	Increase returns on investments	1	2	3	4	5

51. Other (Please specify) _____

SECTION C: CHALLENGES MSSE FACE IN ADOPTING ICT

Barriers to ICT(s) adoption in your business

In the table below, indicate the extent to which the following factors serve as barriers to the adoption of ICTs in your business. Rate them using a 5 point scale of (**1**=Very high, **2**=High **3**=Moderate, **4**=Low **5**= Very low**)** Please tick as many as apply

	Barriers	**1**	**2**	**3**	**4**	**5**
52	High cost of ICT	1	2	3	4	5
53	High cost of Internet connection	1	2	3	4	5
54	Slow Internet	1	2	3	4	5
55	Lack of ICTs-related support	1	2	3	4	5
56	Staff incapability of understanding ICT use	1	2	3	4	5
57	Unawareness of related ICT benefits	1	2	3	4	5
58	ICT cost maintenance	1	2	3	4	5
59	Lack of financial resources in purchasing ICTs	1	2	3	4	5
60	Regular power failure	1	2	3	4	5

61	Difficulty in employing qualified personnel	1	2	3	4	5
62	Uncertain of what type of ICT to adopt	1	2	3	4	5
63	Resistance to change	1	2	3	4	5
64	High cost of employee training	1	2	3	4	5
65	Lack of information of ICT benefits	1	2	3	4	5

66. Other (please specify _____)

APPENDIX C - INTERVIEW GUIDE

Benefits And Challenges Of Information And Communication Technology (ICT) Adoption On Micro And Small Scale Enterprises In Nsawam Adoagyiri Municipality

Dear Sir/Madam,

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.

Name of MSSE Respondent:

……

……

1. What business do you do?

……
……
……..

2. What ICT have you adopted your MSSE

……
……
……
……..…

3. What is the reason for choosing the mentioned ICT ?

……
……

4. How has ICT positively affected your MSSE

……

……

……

5. What motivated you to adopt ICT in your MSSE

   ……

   ……

   ……

6. Do you face challenges in adopting ICT in your MSSE

   a) Yes [ ]

   b) No [ ]

   If yes, can you please mention some of the challenges you faced

   ……

   ……

……

Thank you