**FACTORS INFLUENCING ADOPTION OF E- COMMERCE IN**

**AGRICULTURAL SECTOR TANZANIA**

**A CASE OF SUNFLOWER FARMERS DODOMA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE** **OF MASTER OF BUSINESS ADMINISTRATION (MBA) FACULTY OF BUSINESS MANAGEMENT OF THE OPEN UNIVERSITY OF TANZANIA**

**2025**

**CERTIFICATION**

The undersigned certifies that he has read and here by recommends for acceptance by The Open University of Tanzania a a research report entitled; “***Factors influencing adoption of E- Commerce in Agricultural sector Tanzania” A case of sunflower farmers Dodoma*”** in partial fulfillment of the requirements for the award of degree of Masters of Businesses Administration in Finance (MBA-FN)

**……………………..………**

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**(Supervisor)**

**……………………………**

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**.....................................**

**Date**

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# ABSTRACT

Factors influencing adoption of E- Commerce in Agricultural sector Tanzania” A case of sunflower farmers Dodoma. More specifically, the study examines the extent to which the sunflower SME's economic state, sunflower SME's own characteristics and behaviours, technical infrastructure, and also legal factors affect sunflower SME's adoption of E-Commerce. The study adopted a descriptive research design considering SMEs operating in Dodoma Kongwa district as the case of the study. 100 sunflower SMEs took part in the study as the sample of the study. The researcher adopted both random and purposive sampling because the selected respondents possessed the required knowledge and information in answering research questions of the study; the collected data was qualitatively and quantitatively analysed by using SPSS and analysed by regression model and the obtained results were tabulated. The study finds that four reviewed factors have a direct impact on adoption of ECommerce by sunflower business oparators (SMEs). These aspects include sunflower SMEs own characteristics or behaviors, the sunflower sunflower SME's economic conditions, technical infrastructure, and social-cultural and legal challenges. The findings reveal that on the sunflower sunflower SME's economic condition, the resources cost of acquisition, and even the nature of product prices are the main challenges. Furthermore, regarding the sunflower SME's own characteristics and behaviours, the challenges were found to be in management's support, perception towards E-Commerce, technological competencies, and perceived securities. In the technical aspect, the study further reveals challenges in accessibility of internet, condition of the existing internet infrastructure, and technical support. Support from the government, Taxation issues, intellectual property issues, and level of awareness were the social-cultural and legal factors that were identified. The study recommends that, sunflower business oparator need to consider these four factors very carefully and where possible, effective strategies need to be developed to overcome them. The study further recommends that organizations need to have enough budgets and qualified teams to successfully overcoming these. Also, owing to the study’s limitations, it recommends areas that need further research.

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# LIST OF ABBREVIATIONSAND ACRONYMS

GSMA Global System for Mobile Communications

ICT Information and Communication Technology

SME Small and Medium Scale Enterprises

SIDO Small Industries Development Organization

SPSS Statistical Package for Social Sciences

URT United Republic of Tanzania

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

In the world, agricultural continues to be an important sector of the world economy despite its fluctuations in the production. Agricultural sector is considered to be the main and important source of foods, raw materials and returns of foreign currencies in the developing countries, and also considered the important source of income and this is because more than half of population depends in their live on agricultural sector. Most countries have been complying with changes that are inevitable for their growth and economic stability. Since the early 2000’s the development of information and communication technology has been undeniably substantial and its impact on countries' economic growth cannot go unnoticed (Kabanda,2015). The impact of E-Commerce on agricultural has been felt in all angles, from large famers to Small and Medium Scale farmers. Most farmers have also appreciated the advantages of E-Commerce and are making efforts to make use of this technology, but for some numerous reasons, most have failed to accomplish this due to some various obstacles that they have come across.

In view of the importance of small businesses in Africa and the available business opportunities, development of ICT enhances and improves the competitive advantage of most SMEs. SMEs use the advantages of ICT in enhancing E-Commerce adoption. According to Millita (2011) despite ICT’s importance in creating business opportunities, E-Commerce adoption among small businesses in Africa still remains very low. The study further mentioned that understanding the reasons for this is very important in enhancing SME's business opportunities and increasing SME's competitive advantage. Still, the standing literature on E-Commerce adoption challenges amongst SMEs in third-world countries had some gaps, as most of them do not fully reflect the existing actual situation in Africa.

The Information and Communication Technologies (ICTs) and the Internet have become very important and a powerful tool in today’s business world in such a way that it is now becoming ‘the life blood’ of business, without which most businesses cannot stand the modern-day competition of its operations. ICT, especially, the Internet has different meanings and uses to many people (Rao, 2018). The internet can be used for different purposes and professionals like doctors, engineers, agriculturists, teachers, and marketers etc., the naming may be endless.

A study conducted by Oxley (2014) pointed out five steps that need to be considered by SMEs for a successful adoption of E-Commerce. According to the study, first the SMEs need to have the perception realization of the benefits and opportunities that E-Commerce offers to their enterprises. Based on their perceptions; SMEs will develop Ecommerce desired capabilities to enhance their own capability. Oxley (2012) further mentions that SMEs then need to check the impediments of their sought of capability to appreciate the prospective of the capability. The experienced impediments might influence their believed measures, and should be taken to widespread E-Commerce. The last step is leading to identify the enabled advantages of E-Commerce adoption (APEC, 1999).

Different studies have mentioned the importance of E-Commerce among Small businesses regardless of the challenges they encounter in the adoption process. According to (Bogotha and Pierldo, 2013; Senga and Sensilia, 2013; Luo, 2008; Zhankang & Davis, 2015), different models have been developed to check the challenges facing SMEs in adoption of E-Commerce. Some of these models are those by (Venkatesh & Davis, 2000), relative advantage (Sengy & Vipay, 2011, Semtula & Matengele, 2004, Green, 2004, Wang, 2009), enhanced cash flow & productivity, being able to compete and grasp new customers (Beatty, Shim, & Jones, 2001), improved customer service (Beatty et al., 2001), enhance potential efficiency (Kuan & Chau, 2001), information gathering and building the image of the firm and promotion (Mehrtens et al., 2017), sales increase and getting new partners (Wiertz, 2001), competitive edge (Kuan & Chau, 2001), and organizational-wide support, productivity of the managerial function of the firm, and Strategic decision aid (Grandon & Pearson, 2014).

Despite the contributions that the adoption of Internet technology can make to the wellbeing of firms, research shows that many of them are yet to embrace the technology in ways that will allow them to capitalize on its potential benefits (Cragg & Mills, 2009). It is important that during this internet era, attempt should be made to efficiently adopt and adapt to the use of internet and e-commerce to create a competitive advantage among SMEs in Tanzania and thereby helping SMEs to develop and gain grounds in the global competitive environment. Firms need to know the status (benefits, as well as the barriers and challenges) of e-commerce and internet adoption when establishing policies and strategies (Hinson & Sorenson, 2007).

## 1.2 Statement of the problem

SMEs have been among very important drivers of economic development in African countries. The study By Kiraka (2018) mentioned that small business constitutes about forty percent (40.0%) of all businesses around the world. Also, the study mentioned that SME businesses contribute about 60% of the employment rates in most of the countries.

According to the United Republic of Tanzania (2013), SMEs contribute about 70% of the national GDP, they constitute about 80% of all employments, and also contribute over 80% of manufactured goods output. In spite of the importance of SMEs on economic growth, the performance of SMEs and their survival remain very low and questionable among stakeholders (Asiimwe, 2017). According to the Ministry of Trade Tanzania (2017) about 60% of the small businesses just fail in the first year of their operations. Several factors have been contributing to this; poor saving culture, deficiency of entrepreneurial skills, and their incompetence in exploiting new growth opportunities have literally been underscored as some of the main factors for the low survival rate (Nangoli et al, 2013).

The ascendancy of e-commerce has expanded the agricultural business environment so that even a small start-up can compete with well-established business names and product brands. Yet, when you consider joining the e-commerce community, keep in mind that selling agricultural products and services on the Web presents a unique set of challenges in Tanzania. There are challenges on what already in place, including a national payment system, local credit cards, and a legislative framework appropriate for e-business. These are challenges that need to be addressed urgently (Senga and Sensilia, 2019; Luo, 2018; Zhankang & Davis, 2015), Most significantly, the legal framework does not provide adequate safeguards to create an environment of trust for e-business transactions to take place. Consequently, financial institutions are not able to set up provisions for supporting e-transactions for their own, and each other’s clients. However, the use of traditional marketing mechanism is also one of the constraints facing Tanzania participate in e-commerce.

Despite the fact that the various highlighted studies have done an investigation on the E-Commerce phenomena in the context of a developing country like Tanzania, not even one has presented a theoretical analysis of their findings that is grounded in this context.

This study dwells into making a thorough assessment of the critical impediments facing Tanzanian farmers in their quest to adopt E-Commerce, and in the end, it puts forward strategic propositions that will enlighten policymakers and other business practitioners alike on the best ways of mitigating the impediments through learning how to prioritize the resources that are available in the country. Thus provide the rationale to proposal this study entitled as “Factors influencing adoption of E- Commerce in Agricultural sector Tanzania “A case of sunflower farmers Dodoma

## 1.3 Objective of the Study

**1.3.1 General Objective**

The study seeks to achieve its general objective of ‘Factors influencing adoption of E- Commerce in Agricultural sector Tanzania, a case of sunflower farmers Dodoma’’ by focusing on the following specific objectives;

**1.3.2 Specific Objectives**

1. To examine the influence of sunflower farmers' characteristics and behavior on the adoption of E-Commerce.
2. To examine the extent to which sunflower farmers' economic factors affect the adoption of E-Commerce.
3. To examine the extent to which legal factors affect sunflower farmers' adoption of E-Commerce.
4. To evaluate the extent to which technical infrastructure affects sunflower farmers' adoption of E-Commerce.

**1.4 Research Questions**

1. What is the influence of sunflower farmers' characteristics and behavior on the adoption of E-Commerce?
2. To what extent do sunflower farmers' economic factors affect the adoption of E-Commerce?
3. To what extent do legal factors affect sunflower farmers' adoption of E-Commerce?
4. To what extent does technical infrastructure affect sunflower farmers' adoption of E-Commerce?

**1.5 Significance of the Study.**

This study’s findings will make available some resourceful information and will act as a more reliable guide to policy makers, regulators and governing bodies. It will enable them to formulate adequate policies, rules and regulations that will set suitable ground for sunflower farmers to operate efficiently while making sure their business operations will be conducted as per the required set principles and costs are reasonably priced for the benefit of many.

The findings of this study are expected to be beneficial to a number of people and groups. Due to the change in information technology, globalization and openness in marketing, farmers need to strive to ensure they become highly competent and competitive by applying latest technology in doing business to bring a progressive impact to their business operations, the stakeholders and the economy at large. These organizations need to advance their operations, adopt new ways of conducting business in order to strive, survive and continue to remain relevant and competitive in the market.

The discoveries of this study will be of great importance to farmers, as it will shed some light to the farmer’s operators and owners on the best way to effectively utilize the concept of E-Commerce in their business activities to improve sales turnover and consequently increase their market shares. Moreover, the expansion of the customer base is allowed by online transaction through global market penetration due to heightened information access on a global scale, resulting in improved business performance, internal efficiency and operations. A great deal of knowledge to society and academicians will be contributed by this study. It will cater as a source of secondary data for anybody who might be interested in carrying out research on the factors affecting the adoption of E-Commerce by sunflower farmers in Tanzania. Finally, this study serves as a partial fulfillment for the required Master Degree in Business Administration of the Open University of Tanzania.

**1.6 Scope of the Study**

The study’s scope was based on different sunflower farmers’ operators/managers at Dodoma, and Ministry of trade officials. In these institutions, the study was based on the management side and to some slight extent, it also based on their customers from Dar es Salaam in Tanzania. Descriptive study design was basing on the study owing to the fact that it describes in granular details information on a particular subject.

**1.7 Organization of the study.**

This study was consisting of five chapters. Chapter one as discussed above. Chapter two is composed of literature review of the study in which introduction, definition of terms, theoretical review, empirical review and the conceptual framework were covered. Chapter three give research methodology whereby research methods, research design, study area, sampling techniques, and data analysis have been elaborated, Chapter four present data and their analysis and discussing the findings and lastly chapter five cover the summary, conclusion, recommendations and further areas of study.

# CHAPTER TWO

# LITERATURE REVIEW

**2.1 Introduction.**

This is a chapter that gives a summary of the reviews of literature related to the study. First, it outlines the crucial thoughts as used in the study, and then it provides the theoretical & empirical reflections and the developed conceptual framework that guide the study. Furthermore, the research hypotheses derived from the developed objectives are presented in this particular chapter

## 2.2 Conceptual definitions.

### 2.2.1 E-Commerce

Scupola (2012) defined E-Commerce as the interchange and interactions between information technology and the use of information technology in doing commercial transactions in which electronic communication networks play a role of linking business stakeholders (suppliers and customers normally). With E-Commerce systems and platforms in place, be it Internet based or any other related mechanism, has totally changed the way enterprises and organizations communicate with customers and do business*.*

According to Millita (2012) E-Commerce does not imply selling and buying through electronic means only, but rather covers all other related activities that are aimed at supporting sales, and these could be from scope of information related to the product to the actual selling and buying of products and services. Electronic Commerce refers to all value transactions involving the transfer of information, products and services or payments via electronic networks. Electronic commerce organizations redefine their products, processes and business models by using technology to change the way products are conceived, marketed and delivered (Chaffey, 2009). E-Commerce relies heavily on technology such as internet marketing, electronic funds transfer, online transaction processing, supply chain management, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Electronic is generally presumed to indicate a medium or platform that incorporates the use of Information Communication Technologies (ICTs).

## 2.3 E-Commerce Phenomenon and Country profile

Tanzania has an area of 945,000 sq km (365,000 sq miles) and a population of about 42 million. Dar-es-salaam is the commercial capital and home to many government institutions and diplomatic missions. There are about 120 ethnic groups on the mainland, although none exceeds 10% of the population, as well as minority Asian and expatriate communities. Tanzania's economy relies heavily on agriculture, which accounts for nearly half of GDP and employs 80% of the workforce. Tourism is growing in importance and ranks as the second highest foreign exchange earner. Mineral production has grown significantly in the last decade and provides over 3% of GDP and accounts for half of Tanzania's exports.

According to Millita (2019) the number of Internet users around Tanzania has been steadily growing and this growth has provided the impetus and the opportunities for global and regional E-Commerce. However, with Internet, different characteristics of the local environment, both infrastructural and socioeconomic, have created a significant level of variation in the acceptance and growth of ecommerce in different regions of Tanzania. It is these controversial finding in the literature that have motivated the paper. The aim of the work is to examine the existing and prospective barriers to E-Commerce to the successful operation of ECommerce to Tanzanian firms and suggest some strategies to overcome these barriers.

Despite the spectacular dot-com bust of a few years ago, the Internet has markedly changed the way we do business, whether it’s finding new streams of revenue, acquiring new customers, or managing a business’s supply chain. E-commerce is mainstream — enabling businesses to sell products and services to consumers on a global basis. As such, e-commerce is the platform upon which new methods to sell and to distribute innovative products and services electronically are tested.

The Web’s influence on the world’s economy is truly astonishing. The business world knows that the Web is one of the best ways for business such as manufacturers to sell their products directly to the public, brick-and-mortar retailers to expand their stores into unlimited geographical locations, and for entrepreneurs to establish a new business inexpensively.

Thus, it is important that the executive in the 21st Century know 1) where technology stands in the business processes of his or her company, 2) how technology relates to the company’s strategies, 3) how rapidly technology changes and evolves, and 4) how the company and its business partners will respond to the changing technology (Awiagah, 2016).

Kabanda and Brown (2015), In the high flying 1990s, many people jumped on the e-commerce bandwagon after reading the many highly publicized dot-com “success” stories. Admittedly, most were written to raise the entrepreneurial blood pressure. What many forgot, though, was the old adage: If it looks too good to be true, it probably is. They didn’t use their innate intelligence and failed to proceed with caution.

Nonetheless, the ascendancy of e-commerce has expanded the business environment so that even a small start-up can compete with well-established business names and product brands. Yet, when you consider joining the ecommerce commerce community, keep in mind that selling products and services on the Web presents a unique set of challenges. This study will help in identifying and realizing on those challenges with respect to Tanzania scenarios (Awiagah, 2016). There are challenges on what already in place, including a national payment system, local credit cards, and a legislative framework appropriate for e-business. These are challenges that need to be addressed urgently. Most significantly, the legal framework does not provide adequate safeguards to create an environment of trust for e-business transactions to take place. Consequently, financial institutions are not able to set up provisions for supporting e-transactions for their own, and each other’s clients. However, the use of traditional marketing mechanism is also one of the constraints facing Tanzania participate in e-commerce (Awiagah, 2016).

The evidence from literatures also supports that the hype and promise of e-commerce has been well recognized, but the fact is, it has not been realized at the rate which policy documents and government claim. According to Millita (2019) There are very limited ICT developments in Tanzania with less than three people in every 100 people having access to ICT infrastructure. Kabanda and Brown (2015) all Governments particularly in Developing countries should play the leading role in the development of Infrastructure including financing Experience has shown that the Private sector is not able to take the responsibility of owning and, thus carrying out all the rehabilitation, and maintenance of the existing network and expansion of the new one that reaches all people in the rural and under-served areas for creating open access to all.

## 2.4 Theoretical Frame work.

There are several models of internet and e-commerce adoption, however due to the relevance of these models to help us build the conceptual framework, we have decided to review the logical sets of propositions established from existing empirical facts. The following models and theories will guide this study;

### 2.4.1 Technology Acceptance Model (TAM)

Technology Acceptance Model, which was established by Davis (1989)is among the utmost research models that are used to forecast use and how much acceptable information systems and technology are to individual users. The model (TAM), has been extensively studied and tested by various studies that have attempted to examine individual technology acceptance behaviour in different information system theories. TAM model presents two factors that are pertinent to computer use behaviour, the perceived usefulness and perceived ease of use. TAM study, explains perceived usefulness as the potential user’s probability that using a specific application system will improve his working performance (Surendran, 2012).

The degree in which it is likely for a user to expect the system will lessen the effort describes the simplicity perception as pointed out by Davis (1998) when he talked about external variables influenced ease of use. This study informs the current study; in order to examine adoption of E-Commerce among sunflower farmers, this study has adopted variables used on TAM model and the theoretical concept of use behaviour.

 Figure 2. 1 Technology acceptance model

External

Variables

Perceived

Usefulness

(

U

)

Perceive Ease

of Use

(

E

)

Attitude Toward

Using

(

A

)

Behavioural

Intention to Use

(

BI

)

Actual System

Use

**Source:** Davis, (1989)

### 2.4.2 Extended Technology Acceptance Model (TAM2)

(Venkatesh and Davis, 2000) suggested a new type of TAM, named TAM2 which introduced additional variables to the already existing model. TAM2 presents two factors that are relevant to computer use behaviour, perceived usefulness and perceived ease. TAM study, states perceived usefulness as the potential user’s likelihood that using a certain application system will improve his working performance (Surendran, 2012). In addition, TAM explains that the degree in which it is likely for a user to expect that the system will lessen the effort describes the perceived ease of use as pointed out by Davis (1998) in the ease of use influenced by external variables. Adopted from TAM, TAM2 model presents variables that have triggered the researcher’s interest in this study, which are meant to substantiate an increase of E-Commerce adoption among SMEs and the associated relationship.

**2.4.3 Innovation Diffusion Theory**

Diffusion of innovation is a theory that pursues to explicate how, why, and the rate at which technology and new ideas spread. E.M. Rogers developed the theory of Diffusion of Innovation (DOI) in 1962. According to the theory, an innovation refers to anything that is perceived to be new, such as an object, a practice or an idea, either by an individual or by a unit of adoption. Peterson and Mahajan (1985) gave a description of diffusion of innovation to be the process that it takes to converse innovation through specific means for a certain period of time between particulars of social arrangements.

Rogers (2003) describes the patterns of adoption of technology, the used mechanisms and a prediction of whether the new invention will be successful and to what extent it will be successful. The theory further explains how over a certain duration, technological innovations get to be communicated through particular conduits among members of a particular social system. It was noted how mobile technology like the internet and mobile banking systems have been accepted by sunflower farmers operators and their consumers, and how successful they have been. Servic (2004) made an observation that not all inventions are easily accepted; no matter how noble they may be. It sometimes takes long for its adoption to finally take place. Not all innovations are implemented by sunflower farmers, no matter how good they may be. Various factors determine adoption and implementation (Rogers, 2003). A new technology will be accepted by sunflower farmers when perceived to be beneficial.

The model is suitable for this study, for it considers the nature of most of sunflower farmers where by most seem to be service providers and not business oriented. Now considering the changes in marketing and ICT, these organizations need to be versatile enough for them to be very effective and able to compete in international markets.

**2.5 Empirical Literature Review**

According to Nkhoma, (2019) who analyzed the relationship between ICT development and SMEs development in developing countries revealed that in most cases most of SMEs lack the necessary technical capability, making it the main reason for failure to adopt E-Commerce among SMEs. According to the study, there is low computer literacy among SME operators, and hence most of them are not capable of adopting E-Commerce. In addition, the study mentioned that most of the operators are concerned about the acquisition and maintenance costs associated with E-Commerce adoption. Furthermore, the negative perception among users is another factor mentioned in the study, plus infrastructure problem. The study also mentioned low level of awareness of technology and absence of enabling environment to be other contributing factors having a negative impact on E-Commerce adoption readiness. OSAA, (2017) also did a survey on SMEs in the global market in India using survey on 6 public institutions in Delhi. The study distributed the internet adoption barrier into two groups, including SMEs internal and external barriers. According to the findings of this study, the internal challenges include staff qualifications, securities among the users, and nature of the products that companies deal with. The study further mentioned external barriers such as level of awareness, accessibility of internet, cost and support from the government, legal framework, and Tax related factors. The study conducted by Mauricio (2018) ‘New business model for small and Medium Enterprises in Colombia’ found out that most technology adoptions are based on individual preferences and not organizational strategic decisions, because their owners directly manage the SMEs. (Mureithi, 2020) found out that one of the challenges facing the adoption of the E-Commerce is the fact that the internet is widely distributed and accessible in big towns, and poorly accessible in rural areas. The study further mentioned that, SMEs face a lot of challenges in their quest to adopt E-Commerce, especially those in rural areas. As per the study’s findings, most of the SMEs do not go with the same speed as the revolution in Information and Communication Technology; as a result they always lag behind and fail.

Bharati and Chaudhury (2016) carried out a study in the US and alluded that, firm size has a major impact on the kind of technology employed, arguing that large firms have a high propensity to adopt quality systems due to their size and the number of resources they have, unlike small firms which are challenged by unavailability of sufficient resources. Size of the firm is also a major aspect in determining external expertise advice, with the smallest firms least likely to seek external advice. The study further mentioned that E-Commerce adoption is more credible in larger firms; the size of the firm determines the implementation of advanced technology, depending on the cost and risks of innovative activity in relation to existing techniques. The study by Ploch (2019) on “The E-Commerce situation among SMEs in developing economies using descriptive design, found out that among the challenges facing SMEs on adoption of E-Commerce are level of awareness on the importance of E-Commerce, how to adopt, and the technical competence among SME operators. The study further explains other barriers such as acquisition cost, confidence on the use of ICT by business operators, security on E-payments systems, and some of the rules and regulations that are in place. The article by Green (2015) titled “Linkages and Connections: A Framework for Research and Information and Communication Technologies” revealed that lack of competence in the use of ICT is the main contributing factor to poor adoption of ECommerce among small businesses. The study by Siskia (2012) found that the influence of technical support and computing skills are the main reasons for the low level of adoption of E-Commerce among SMEs in most developing countries. Similarly, lack of staff expertise and commitment affect E-Commerce adoption by small businesses. The study further explained that this is the case because ICT is new and needs expertise and competence, in which most business operators do not have. The study further added that SMEs need to hire experts to take them through ECommerce adoption so as to familiarize them with everything that it takes to have everything up and running, and clear all their doubts regarding the technology.

Moreover, the study by Akomolafe (2018) on Challenges of E-Commerce among small businesses, found that most of developing economies have resource challenges, such as capital, time management, and skills when it comes to adoption ECommerce. The study further found a negative perception among users, passion in using E-Commerce, perceived high operational cost, and security on the transactions to be another set of hindering factors on the adoption of E-Commerce among SMEs. Furthermore, the study revealed that high cost, lack of skills, and management challenges are also factors that significantly impact E-Commerce adoption among SMEs.

**2.6 Research gap**

Despite extensive studies on E-Commerce adoption among SMEs, there remains a significant research gap concerning the context-specific challenges faced by SMEs in Tanzania. Most existing literature, such as studies by Nkhoma (2019) and Mauricio (2018), focuses on global or regional perspectives, leaving a lack of empirical data on the unique socio-economic, infrastructural, and regulatory challenges affecting Tanzanian SMEs. The role of government policies, legal frameworks, and financial incentives in facilitating or hindering E-Commerce adoption in Tanzania remains underexplored, necessitating further investigation.

Additionally, while some studies highlight barriers such as cost, security concerns, and lack of ICT skills (Akomolafe, 2018; Ploch, 2019), there is little research examining the influence of emerging financial technologies, particularly mobile payments and digital banking solutions, on E-Commerce adoption among SMEs. Tanzania has experienced significant growth in mobile money services, yet the extent to which this technology can enhance digital transactions and support SME adoption of E-Commerce remains unclear. Understanding the intersection between mobile financial services and E-Commerce adoption would provide valuable insights for policymakers and business stakeholders. Moreover, there is a limited exploration of the psychological and behavioral factors that influence E-Commerce adoption among SME owners and employees. Studies like Nkhoma (2019) and Akomolafe (2018) mention negative perceptions and lack of confidence in technology but do not delve into how attitudes, risk tolerance, and digital literacy impact decision-making. A more in-depth analysis of these behavioral aspects could offer solutions to address resistance and improve adoption rates. Addressing these gaps will contribute to a deeper understanding of how SMEs in Tanzania can effectively integrate E-Commerce into their operations.

## 2.6.1 Conceptual Framework.

A conceptual framework is a research tool which postulates the relationships among study variables these variables are dependent and independent variables of the research objectives and sometimes even intervening variables, if any. Additionally, a conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Kombo and Tromp, 2016). The framework of the study designates four independent variables, namely farmers economic factors, sunflower farmers own characteristics and behaviour, technical infrastructure and Socio-cultural and Legal factors as they have a relationship with one dependent variable, i.e., sunflower farmers adoption of E-Commerce. The underlying hypothesis is that, how sunflower farmers adopt and implement E-Commerce is directly affected by these variables.

DEPENDENT VARIABLES

**INDEPENDENT VRIABLES**

**Farmers Own Characteristics**

* Level of education
* Digital literacy and awareness
* Willingness to adopt new technology
* Perceived benefits of E-Commerce

**Farmers Economic Factors**

 Access to financial resources

 Cost of internet and digital tools

 Income level of farmers

 Availability of government or private sector support

**Legal Factors**

 Existence of supportive E-Commerce regulations

 Farmers’ awareness of digital trade laws

 Protection of consumer and seller rights

 Tax policies on digital transactions

**Adoption of E-Commerce**

**Technical Infrastructure**

 Internet accessibility and reliability

 Availability of digital payment systems

 Quality of mobile and ICT devices used

 Technical support and training availability

Figure 2. 2 Conceptual Framework

Source; Researcher (2022)

From the developed conceptual framework, the sunflower farmers’ economic factors include financial resources available, cost justification to implement E-Commerce, the accessibility of internet to both buyers and sellers, which will be highly determined by the cost of internet access, and the cost of operating and maintaining E-Commerce. The framework also mentions sunflower farmers characteristics that seem to highly affect sunflower farmers in adopting E-Commerce; these include perception of owner towards technology, management support for medium enterprises, technological competence, perceived security in E-transactions, and nature of the products involved. These factors in one way or another affect adoption of E-Commerce among sunflower farmers.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

Research methodology is the systematic, theoretical analysis of the procedures applied to a field of study (Kothari, 2004). It involves procedures of describing, explaining and predicting phenomena so as to solve a problem; it also contains techniques and strategies of conducting research. Research methodology covers concepts such as research designs, target population, sample size and sampling procedure, data collection instruments and data analysis procedure. Therefore, this section discusses the methodology of the study on the area surveyed, sampling procedures, data collection methods and analysis methods.

## 3.2 Description of the study area

The study was conducted Kongwa in Dodoma Region. Dodoma region is purposively selected for the study on the strength of the fact that a variety of interventions have so far been implemented by the government and development stakeholders in trying to revamp the sunflower processing firms in the region. Dodoma Region is located between 60 South and 360 East of the Equator. The region lies at the heart of Tanzania in the eastern-central part of the country, covering an area of 41 311 km2 with population of about 2 083 588. The Region consists of seven districts namely Bahi, Chamwino, Chemba, Dodoma Municipality, Kondoa, Kongwa and Mpwapwa (Iringo *et al*., 2014; NBS, 2012).

Kongwa District is geographical located in coordinates 6.2oS and 36.4oE of the Equator. It is bordered to the North by Kondoa district, to the East by the Kilosa district, to the South by Mpwapwa district and to the West by Dodoma Rural district. Kongwa district is divided into 14 wards.

## 3.3 Research paradigm and philosophy

Hair (2015) suggests that research paradigm consists of three types, namely interpretive, realism, and positivism (Mcnabb 2007). In this study the researcher was used positivism research paradigm owing to the fact that it banks on, both, qualitative and quantitative data, which are considered to be more reliable. According to Hair (2005), positivism adopts a distinct structure in studies and discussions. It is believed this helps in reducing the research breadth and hence resulting into reduced variances of data and severe changes in variables, thus making hypothesis testing and the whole study more accurate.

**3.4 Research Design**

Cooper & Schindler, (2018) defined research design as the master plan for a researcher to investigate the objectives and obtain answers to the proposed research questions. This systematic process allows a researcher to properly formulate research questions and find an appropriate data collection method that was assist in answering research questions that in the end was provided research outcomes of the study. Research design consists of five different types, i.e. correlation, cross-cultural design (ibid), descriptive, case study, and experimental. In this study, the researcher has adopted the descriptive study research design and also inferential analysis because it relies more on examining independent variables’ effect on dependent variables of this study. The researcher’s need to establish a comparison of farmers operations among those selected has also influenced the selection. In a similar manner, the researcher had put a consideration for the research approach to be taken in conducting the study. Kombo (2006) suggests three approaches of conducting research; a quantitative approach, a qualitative approach and a mixed approach. For the purpose of this study, the researcher was using a mixed research approach, for it combines both, quantitative and qualitative research approaches.

## 3.5 Target population

Burns (2012) defines target population as the entire group of people, objects or events which of all have at least one characteristic in common and must be defined specifically and unambiguously. Also, this is supported by Msabila and Nalaila (2013) as a complete set of elements (person or objectives) that possess some of the common characteristics defined by the sampling criteria established by the researcher. For the purpose of this study, the targeted population were all sunflowers’ farmers in Kongwa district. From the National sample census of agriculture 2016/2017 Dodoma region have 126,780 households participated on sunflower farming.

## 3.6. Sampling Procedures and the Sample Size.

Sampling refers to the process of drawing a sample from the large population. Or can be defined a sample design as a definite plan for obtaining a sample from a given population (Kothali 2009). A sample design is the part drawn from the total population from the surveyed area. Sampling frame is the systematic and organized list of the sampling units. There are many sampling methodologies and to this study cluster sampling method were employed because include people of similar characteristics in that particular location.

### 3.5.1 Sample Size

The selection of sample size in this study was based on the rule given by (Curry and Rick, 2016) that recommended a sample of 10% for a population of 101-1000 respondents for descriptive studies. The sample selected was enable the researcher to provide answers to the research questions and came up with comprehensive, reliable and accurate data. The study was involved a population of 126,780 sunflower farmers in (National sample census of agriculture 2016/2017 Dodoma region) in the study area from which the sample size are 110 respondents. The sample size was determined by applying the formula given by Kothari, 2004.

Where:

n= Size of sample

N = Size of population targeted

e = acceptable error (0.05)

Z = confidence level 95%, for statistical value of 1.96

P = sample proportion of the problem to occur

q = sample proportion of the problem to not occur (q=1-p)

n= 110

## 3.7 Sampling Techniques/Methods Employed

### 3.7.1 Purposive or Judgment Sampling

In this method was employed during a surveying because it involves selection of farmers (respondents) that were judged as appropriate for given study. And under this case, farmers which involving in the sunflower farming was selected to be involved in this study. This technique is appropriate when what important is the typicality and specific relevance of the sampling units to the study and not their overall representative of the population.

### 3.7.2 Simple Random Sampling.

This is a probability sampling where by all members in the population has equal chance of being selected to form a sample (Adam &Kamuzora 2008). The use of this method gave each respondent an equal chance of being selected. This technique is appropriate where the sampling frame is not too large, and each unit is easily accessible (White,2012) as the case for the sunflower famers from specified villages.

It is also good when the population is made up of members of similar characteristics, as the size of random sample depends on the similarity (Shaughnessy et al.2000). It is easy to apply and require no prior knowledge or true composition of the population. Also, it is easy to compute the amount of sampling error related to it. Under this sampling method bias is generally eliminated and can be estimated (Kothari,2009)

### 3.7.3 Stratified Random Sampling.

Stratified random sampling is a sampling technique whereby the total population is divided into different groups before selection of the representatives (Adam &Kamuzora, 2008). Each group or layer is commonly known as strata. This is to ensure representation of all members of the population. Those fundamentals having similar individualities are grouped into the similar level. And if a population from which a sample drowns does not constitute homogeneous group stratified sampling method is generally applied in order to obtain a representative sample (Kothari, 2007).

And this is more important when the population in a selected district from which a sample is drawn has different characteristics. It results in more reliable and detailed information. It increases a sample’s efficiency and providing data for analyzing the various sub-populations. In the sampling technique of this study, farmers was classified according to their number of within their villages. From these strata, the simple random sampling was employed to carry out the study.

## 3.8 Data Collection Methods.

Designed for this study, both primary and secondary data sources will be used the most important factor to be taken into account when determining the sample number of the study.

### 3.8.1. Primary Data.

According to Saunders (2017) explain that the data that is initially collected for a current particular study, and is used for the first time and this study is regarded as primary data. This type of data is usually collected directly from respondents through interviews or by using questionnaires, which can be either structured or unstructured.

In this study, the researcher makes the use of questionnaires to obtain respondents’ views regarding different factors and their effect on farmer’s decision while considering whether to adopt E-Commerce or not.

### 3.8.2 Secondary Data

According to Churchill and Brown (2007) data that is collected from other materials, is known as secondary data. This is the type of data that has not been collected specifically for the present study, but it is rather gathered through reading various other materials related to the subject under study, and it can be, either published or unpublished data. In this study, the secondary data that to be used was gathered from various farmers’ reports, publications related to factors that affect adoption of E-Commerce by farmers, institutional and online materials related to the subject matter under study.

## 3.9 Data Collection and Techniques

Observation, Questionnaire and interviews are common research tools used to collect data and in special way; the primary data. This study also questionnaires was employed.

### 3.8.1 Questionnaire.

Millita (2012) explains this to be among the tools that are used to do the actual collection of data, and they could actually be either structured or unstructured. In this study, the researcher wasopted for structured questionnaires containing both, open ended and closed questions, all aimed at ascertaining the various factors that affect adoption of E-Commerce by farmers. Questionnaires wasused to collect data from all farmers’ business operators. The reason the researcher decided to use the questionnaire method is the fact that it enabled him to gather a lot of data at once, (Mathers, 2009).

Researcher was developed structured questions with closed ended questions that was allowing respondent to choose from a set of scale points. Likert-scale was used to measure the scale points from which the researcher asked respondents to indicate the extent to which respondents either, strongly agree, agree, neither agree nor disagree, disagree or strongly disagree, with a follow up series of statements on a given variable.

Questionnaire included 5-point Likert scale. The column " agree" measured from 1-Strongly Agree; 2-Agree; 3-Indifference; 4-Disagree; 5-Strongly Disagree. This research will include analyses such as descriptive analysis, correlation analysis and t-test.

The skewness and curtosis of to be observed variables and checked that they got a value between +/-2, and overall multivariate normality is assured by checking that the sum of skewness of all that was observed variables is less than 10.

### 3.8.2 In-depth Interviews

The exhaustive interviews that were conducted involved face-to-face approach of discussions, in which a full liberty of expressing their views was granted to all respondents based on the questions directed to them by the interviewer. The interviews were done. The researcher was asked questions generally in a face-to-face contact to the respondents. (At times the interviewee that was responded also ask certain questions and the interviewer that researcher was responded to these, but usually the interviewer was started the interview and collects the information) This kind of interview was in the form of direct personal investigation or indirect oral investigation. The researcher got a lot of information from respondents through interview method and was suitable method for respondents who were not able to read and write (Rwegoshora, 2016)

## 3.9. Reliability and Validity

### 3.9.1 Reliability

Kothari (2009) provides a definition of reliability as the degree to which an instrument measures what it is supposed to measure. In order to ensure that the results are reliable, the same sets of questions were asked. Therefore, since all informants were interviewed separately, subject bias was controlled to a large extent. Cronbach's alpha was used to measure reliability. Researchers aiming to determine Reliability using the test-retest method generally predict the Reliability by using the Pearson correlation coefficient or comparing the data using the t-test (Oluwatayo, 2012). It should be remembered that the population from which the sample data comes must have a normal distribution in order to perform the T-test.

Although there are different opinions in the literature regarding the interpretation of the obtained data, the general opinion is that a correlation value of 0.80 and above indicates that the measuring instrument provides test-retest Reliability. Also, the researcher uses the Cronbach alpha coefficient as a measure of “the internal consistency of the six scales”. That “the Cronbach alpha reliability coefficient for each scale, using an individual farmer as the unit of analysis, ranged between 0.87 and 0.70” which they considered “generally satisfactory.

### 3.9.2 Validity

Validity as explained by Saunders *et al* (2009)is concerned with whether the findings are really about what they appear to be about. It is the relationship between two variables. Kothari (2009) adds that, validity is the degree to which an instrument measures what it is supposed to measure. An expansion of the meaning validity has given by Kombo and Tromp (2006) as the accuracy or meaningfulness and technical soundness of the research. It is a measure of how well a test measure what it was supposed to measure. In order to test the validity of the data collection instruments, the researcher were conducted a pilot study, the aim for the pilot study get information from informants that enable the researcher to modify and improve the research instruments. Before the main survey that to be conducted, the researcher makes cross check trainings in order to solve inconveniences that might happen. Hence a pretest survey was helped the enumerator to administer valuation survey as well as to check the wording and structuring of the questionnaire was conducted. Under this study we adopt a constructive validity on whether you can draw inferences about test scores related to the concept being studied.

## 3.10. Data Analysis Procedures

In this study, the analysis was achieved by using a statistical package known as SPSS, short form for Statistical Package for the Social Sciences. In order to ensure respondents’ consistency, and logical completeness, analysis of the data involved the tall of the frequencies and the percentages from all respondents. Likewise, to ensure the data was collected is valuable, valid and reliable, before coding the data onto SPSS the researcher did a data cleaning exercise whereby some of the data was edited and some completely was removed. Once a clean set of reliable data was established, then was coded onto SPSS ready for analysis, which is then conducted both qualitatively and quantitatively.

The researcher was employed both, logical and content analysis in analyzing the qualitative data. Furthermore, the analysis of qualitative data also was employed thematic analysis in some cases. In order to be able to determine the respondents’ proportions per variable, the researcher use of frequencies and simple distribution. The researcher also were employed Multiple regression analysis to test variable relationships for every hypothesis, in which the researcher accepted the null hypothesis if it shows a positive correlation. Descriptive statistics was used which includes mean and standard deviation for objective a, b and c and the findings summary tabulate and put in charts. To ascertain and make an analysis of the extent at which farmers are using E-Commerce, the researcher used percentages and frequencies. The study further applied inferential statistics: The following multiple regression model was used.

*Whereby:*

Y= E-Commerce Adoption

 X1=Economic factors

 X2= farmers Characteristics and behaviour

 X3= Technical infrastructure X4= Socio-cultural and Legal factors a0=constant a1, a2, and a3 are parameter for estimation e = error term

## 3.11 Ethical consideration

Ethics was considered as the researcher had research clearance from The Open university of Tanzania where by the introduction letter was provided and also for the permission to conduct research and to collect data was requested to the appropriate Authorities. Before consenting to participate in the study the respondents was provided with the information about the purpose, duration and potential benefits of the study. Moreover, to avoid Plagiarism and Fraud, the researcher did not “Cut and Paste” but instead source of and authors were acknowledged, by applying the proposed ethical strategies as explained, the researcher obtained superior and sound data that enabled the research findings of high value in addressing the real picture of the phenomenon under the study.

# CHAPTER FOUR

# DATA ANALYSIS, PRESENTATION AND INTERPRETATION

## 4.0 Introduction

This chapter contains data analysis, presentation and discussion of the findings from the data found from the study area in Dodoma sunflower farmers. Outcomes and discussion focused on answering research questions identified by justifiable evidence from field respondents, in order to meet specific research objectives. A thorough analysis in response to each question asked by the subject was performed.

The main objectives of this study are to assess the factors influencing adoption of E- Commerce in Agricultural sector Tanzania, a case of sunflower farmers Dodoma. Dodoma region contains SME’S of different sectors such as wholesaler, Retailers, Service Sector and customers (clients) who are useful in operations of the sunflowers business and its efficiency. The study’s specific objectives were broken down into four specific objectives hence providing focus to the study. The study firstly identified issues that influence of sunflower farmers characteristics and behaviour on the adoption of E-Commerce, secondly determined examine to what extent do sunflower farmers economic factors affect adoption of E-Commerce thirdly to examine to what extent do legal factors affect sunflower adoption of E-Commerce and finally the study enumerated how the the extent to which the technical infrastructure affects sunflower farmers on adoption of E Commerce. The results were from the analyzed data which were found from questionnaires. Results were presented by using tables, charts and graphs. In data analysis, explanations and descriptions have been provided where necessary followed by discussion.

## 4.1 Questionnaire response rate

This is the rate at which selected (respondent) people / respondents responded and disclosed relevant information to the research questions provided by the researcher to meet the general research and specific objectives. A total of 110 questionnaires were given to respondents; of the 110 questionnaires of the 100 questionnaires are completed representing a response rate of 91.84 percent. The remaining 8 questionnaires could not be completed as some respondents included questions in their work list. According to Mugenda (1999) a response rate of 50% or higher is a good response rate and gives us a satisfactory level of statistical reporting. Therefore, 91.84% is materially important to present to the general public. Table 4.1 shows the response rate of the sampled Dodoma sunflower farmers.

Table 4. 1 Response rate of Dodoma sunflower farmers

|  |  |  |
| --- | --- | --- |
| **Response to questionnaires** | **Frequency** | **Percentage (%)** |
| Filled in Questionnaires | 100 | 90.9% |
| Unfilled/Unreturned Questionnaires | 10 | 9.1% |
| **Total** | **110** | **100%** |

**Source**: Research Findings, 2022.

## 4.2 Characteristics of the respondents

The researcher selected respondents from sunflower farmers operating in Dodoma district. Since the study involved sunflower farmers and adoption of E-Commerce, then the researcher selected respondents who have come into contact or practice business activities that in one way or the other interact with some kind of E-Commerce systems.

The researcher checked on the demographic characteristics of the respondents, which include their Education level, Age, Nature of business, for how long have their business operations been operational, and their genders. This was very important, for it enabled a clear understanding of how valid and reliable the collected data is.

### 4.3.1 Age of the respondents

The result in figure table 4.2 below shows that, all respondents belonged in the working age group (economically active). That means majority of the respondents who were interviewed are the ones who were economically active. Hence, if they are fully economically and socially empowered, they can be good resources in the production process and it helps to know the kind of respondents that have participated in the study.

The analysis shows high proportions of 62 respondents, equivalents to 62.0% are in age group of between 25 to 39 years old, also the findings further indicate the remaining group of 38 respondents, which is equivalent to 38.0%, are those aged above 39 years old. The distribution of the respondents based on age groups was done to establish the percentage of youth, adults, and elders.

Table 4. 2 Responses feedback summary by their age

|  |  |  |
| --- | --- | --- |
|   | **Frequency** | **Percent** |
| 25 to 39 years  | 62 | 62.0 |
| Above 39 years  | 38 | 38.0 |
| **Total**  | **100** | **100.0** |

**Source:** Researcher, 2022

### 4.3.2 Gender of respondents

Respondents were checked on their gender composition too. This was very important as it gives the picture of what proportion of the respondents are males and what are females. This was very important in ensuring both genders are given equal chances.

 Findings summary in figure 4.1 indicates that male respondents were many as compared to female respondents, in which 60% were males while females constituted the remaining 40%. Despite the analysis showing this proportion, but at least females were given an equal chance. The study by Mgori (2015) on the impact of financial institutions on business operations in Uganda revealed that females are always behind when it comes to formulation of SMEs.

 

Figure 4. 1 Sex characteristics of surveyed Dodoma sunflower farmers.

**Source**: Researcher, 2022.

### 4.3.3 Capital of the business operation

As indicated in the definition of the key terms in literature review section, there are 3 categories of small business; in this regard, understanding the nature of the businesses that participated in this study was very important. Hence, the researcher inquired about details of the invested capital in the sunflower businesses. The results of the analyzed data regarding invested capital for the sunflower businesses is as shown in Figure 4.2 below:

The results as indicated in Figure 4.2 below designates that the majority of sunflower farmers that were engaged for this study’s sake are Medium Enterprises. This is because their invested capital is more than TShs 100m. With this group of respondents in place, the study has very good data as respondents falling within this group can easily adopt E-Commerce because they do have enough capital for their sunflowers business operations.



 Figure 4. 2 Responses feedback on the capital of their sunflowers farming operations

**Source**: Researcher, 2022.

### 4.3.4 Period of SMEs on sunflower business.

Getting to know the period in which sunflower farmers have been in operation is very important as it helps to determine the kind of respondents that participated in the study. The results of the analyzed data on this are as shown in Figure 4.3 below:

The findings, as per Figure 4.3 below, indicate that the majority of respondents, equivalent to 52.0%, are those who have been operating their businesses in between 2 -5 years on sunflower business; 28% of the respondents have been in business in between 6 – 10 years on sunflower business; 16% are those who have been operating in less than 2 years, and 4% of the respondents have been operating for more than 10 years on sunflower business.



Figure 4. 3 Responses feedback on sunflower business operations

**Source**: Researcher, 2022.

## 4.4 Findings, analysis and discussion as per study objectives

The findings in relation to the formulated research objectives are summarized in the preceding part of this chapter, referring to the study’s specific objectives, which aimed at examining how economic factors, sunflowers farmers characteristics, technical infrastructure, and Social-cultural and legal factors affect or influence sunflowers farmers adoption of E-Commerce.

**4.4.1 Objective one**

This objective examined how the sunflower farmers characteristics and behaviour on the adoption of E-Commerce. This objective is answered by the analysis, findings, and discussions about the following variables:

### 4.4.1.1 Perception towards technology

When asked if the perception towards technology is one of the challenging factors in adoption of E-Commerce by sunflower farmers, respondents gave out their views; the analysis discloses that most respondents concurred with this. The findings results are summarized below: From the analysis of data as summarized and presented in Figure 4.4 below, it shows that there is a high proportion of the responses, i.e. 68 respondents, which is equivalent to (68.0%) of the respondents agree on this; whereby (32%) strongly agree, and (36.0%) respondents just agree, 14 (14.0%) of the respondents neither agree nor disagree, and the rest of the respondents, i.e. 2 (2.0%) disagree on this.

 Figure 4. 4 Responses feedback on perception towards technology

 **Source:** Researcher, 2022.

In a discussion with one of the sunflower famers, below was his argument:

*“Most of us do not believe in, or fear adoption of E-Commerce because of cost and lack of enough knowledge on how to operate it; so, this leads to most of us opting to not adopt it, but may be things are not as we perceive them to be”*

###  4.4.1.2 Sunflowers farmers technological competence

The study checked with the respondents to obtain their views on if they have enough competencies on adopting E-Commerce on their sunflower business. The analysis reveals that some of the respondents are capable but at the same time, it reveals that some of them do not have the necessary competence, and hence this could be one of the challenges for farmers in adopting E-Commerce. The analysis reveals also that, most of the SME sunflower operators know just the basics of E-Commerce but do not have the competitive knowledge of operating an actual E-Commerce platform. The study finds a high proportion of the responses agreed on sunflower SMEs technological incompetence having a significant effect on E-Commerce adoption among sunflower farmers. The results of the analyzed data on this are as shown in Figure 4.4below:

From Figure 4.4 below, it shows that only 18 (18.0%) of the respondents strongly disagree on this, 10 (10.0%) respondents are just satisfied, 20 (20.0%) respondents neither agree nor disagree. The analysis also reveals that the majority of the respondents 34 (34.0%) strongly agree on this, and the rest of the respondents, i.e. 18 (18.0%) just agree on this.



Figure 4. 5 Responses on technological competence

**Source:** Researcher, 2022.

In a discussion with one of the SME operators on sunflowers business who was asked to mention anything he knows about E-Commerce and advise whether his SME has fully adopted it, his response was:

*"Regarding E-Commerce, I have already adopted because now am using Instagram to advertise my business and products, and I see a huge impact to my business, I think it’s enough for me, I do not need other kind of E-Commerce adoptions for now*

**4.4.1.3 Lack of Management Support**

The analysis reveals that management of support is among the well know challenges facing sunflower farmers when considering adoption of E-Commerce. The analysis reveals that those farmers whose operators are not the owners have this challenge, the operators complain that the owners of the business do not see the advantage of E-Commerce adoption. In the discussion, it was realized that high proportion of the respondents agreed on management influence on adoption of E-Commerce among sunflowers SMEs. The results of the analyzed data in Figure 4.6 below: From the analysis of data as summarized and presented in Figure 4.6 above, it shows that (30.0%) of the respondents strongly agreed on this, (42.0%) respondents just agreed, (10.0%) respondents neither agreed nor disagreed on this, (16.0%) respondents disagreed this, and the rest of the respondents (2.0%) strongly disagreed on this.

**Figure 4. 6 Responses feedback on Lack of Managements Support**

**Source:** Researcher, 2022

### 4.4.1.4 Perceived securities on E- commerce

The respondents also mentioned that security of E-Commerce platforms somehow worries them, thus affecting their decision to adopt E-Commerce. Respondents mentioned that, online transactions are somehow very complicated, and sometimes they can cause serious financial damages and losses when recklessly done. In addition, the respondents mentioned the high cost of transacting online to be another obstacle that discourages SMEs from adopting E-Commerce to sunflower farmers. The analysis shows that a high proportion of the responses agreed on perceived security affecting adoption of E-Commerce among SMEs.

In the analyzed data presented in Figure 4.7 below, it shows that a high proportion of the respondents agreed on the proposition that security affects adoption of E-Commerce among sunflower farmers; this constitutes (44.0%) of the respondents, (22.0%) respondents strongly agreed on this, (22.0%) respondents just agreed, (36.0%) of the respondents neither agreed nor disagreed with the findings, and (15.0%) of the respondents disagreed on this.



Figure 4. 7 Responses on Perceived Securities on E-Commerce

**Source:** Researcher, 2022

### 4.4.1.5 Relationship between variables

The relationship between the sunflower farmers own characteristics & behaviour and adoption of E-Commerce by is explained in three parts, model summary, ANOVA test and regression coefficient. The following is the regression model summary:

Table 4. 3 Summary of the Regression Model

Model Summaryb

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .962a | .925 | .917 | .35307 |

1. Predictors: (Constant), Nature of sunflower products involved, Managements of Support, sunflower farmers’ technological competence, Perceived securities on e-commerce, Perception towards technology.
2. Dependent Variable: Adoptions of e-commerce among sunflower farmers.

The analysis of the data reveals that, the R values was .962, which is an indication of a relationship that is strongly existing between the independent variable of sunflower farmers characteristics and the dependent variable of E-Commerce adoption. Furthermore, the coefficient of determination shows that 92.5% of the sunflower farmers’ characteristics variable affects E-Commerce adoption by sunflower farmers; this has been explained in this study while the remaining 6.5% has been explained by other variables, which are not being considered for the sake of this case study.

The coefficients of regression between sunflower farmers own characteristics and adoption of E-Commerce have been summarized as below:

**Relationship between variables**

Furthermore, running a regression analysis for the independent and dependent variables, the following findings were produced:

 Table 4. 4 Regression Coefficients

**Coefficientsa**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model |  | Unstandardized Coefficients | StandardizedCoefficient | t | Sgf  |
|  |  | B | Std. Error | Beta |
| 1 | (Constant) | 050  | .129 |  | -.385 | .702 |
|  | Perception towards technology | .440 | .155 | .405 | 2.843 | .007 |
|  | Technological competence | .190 | .119 | .206 | 1.601 | .116 |
|  | Managements of Support | .012 | .097 | .011 | .123 | .902 |
|  | Perceived securities on e- commerce | .119 | .127 | .116 | .941 | .352 |

a. Dependent Variable: Adoptions of e-commerce among sunflower farmers

**Source:** Researcher, 2022

From Table 4.5 above, it shows that for the independent variables perceptions towards technology, sunflower farmers technological competencies, Management’s support, perceived securities of E-Commerce and nature of sunflower products involved, it resulted into a beta value of 0.405, .206, .011, .116 and .258 respectively, which exhibits a positive correlation amongst the variables and adoption of E-Commerce by sunflower farmers.

From the table above, the analysis shows the constant value of -0.050 in which, formulating a relationship between these variables will give out the below regression equation:

*ed=.440pt+ .190tc + .012ms + .119ps + .278np – 0.050*

***Where by;*** *ed* – Adoption of ecommerce by Farmers

 *pt* – Perceptions towards technology

 *tc* –technological competency

 *ms* – Managements support

 *ps* – Perceived security towards E-Commerce

 *np* – Nature of products involved

From the above regression equation, the findings show that by improving perceptions towards technology, sunflower farmers technological competency, Management support, perceived securities of E-Commerce support by 1 unit then the performance of sunflower farmers will be improved by (0.*440 + 0.190 +0 .012 + 0.119 +0.278 – 0.050*).

### 4.4.2 Objective Two

This objective examined how the sunflower farmers’ economic factors affect adoption of E-Commerce the adoption of E-Commerce. This objective is answered by the analysis, findings, and discussions about the following variables:

### 4.4.2.1 Limited financial resources

The researcher checked with respondents to obtain their views on if financial resources is one of the obstacles in their quest to adopt E-Commerce, the analysis discloses that a high proportion of the respondents agreed that limited financial resources negatively affects adoption of E-Commerce among SMEs. The analysis results for the data are as shown in Figure 4.8 below: From the analysis of data in the figure below above, it indicates that high proportion of the respondents agreed to this, which translates into about 60.0% of all respondents, where by (35.0%) strongly agreed, (25.0%) just agreed, (20.0%) of the respondents neither agreed nor disagreed and (15.0%) disagreed 

Figure 4. 8 Responses on Limited financial resources

**Source:** Researcher, 2022

In a discussion with one of the business operators, the researcher quoted him as saying;

*“My business in just new, now I can’t adopt ecommerce because of resources, my capital is still not high so adopting to ecommerce means I need to use some part of the capital to acquire the E-commerce sunflowers, I can’t afford this”*

### 4.4.2.2 Price of products online is low

The study checked with the respondents to seek their views on if online price of sunflowers products affects adoption of E-Commerce by sunflower SMEs. The analysis reveals that high proportion of the respondents agreed on the impact of price of products online and its effect on E-Commerce adoption among sunflower SMEs. The results of the analyzed data on this is as displayed in the below Figure 4.9. From the analysis of data as summarized and presented in figure below, it shows that (30.0%) of the respondents strongly agreed on this, 35.0% of the respondents just agreed, (20.0%) of the respondents neither agreed nor disagreed with this. Furthermore, (5.0%) of the respondents disagreed on this, and the rest of the respondents, i.e. (10.0%) strongly disagreed on this.

: 

Figure 4. 9 Respondents on online sunflower price of products

**Source:** Researcher, 2022

On the side of the sunflower SME operators, when interviewed they mentioned that:

*‘it’s real that I find most of the time the price of the sunflower product needs to be comparatively low when selling online, which does not even cover the cost thus making it not profitable at all. Because of that, I would rather continue selling my products the traditional way, rather than via online channels”*

### 4.4.2.3 Acquisition Cost

In addition, the study checked with the respondents to give their views on acquisition cost of E-Commerce and its impact on the sunflower business performance. This was very important because sunflower SMEs must incur this cost before adopting E-Commerce. The analysis reveals that high proportion of the responses, about 22, which is equivalent to 22.0%, strongly agreed on this, while 37 respondents, equivalent to 37.0%, just agreed; moreover, 13.0% of the respondents neither agreed nor disagreed with this, and only 28 respondents, which equals to 8%, disagreed on this. The results of the analyzed data on this is as shown in Figure 4.5 below.



Figure 4. 10 Responses on Acquisitions cost

**Source:** Researcher, 2022

### 4.4.2.4 Accessibility of Internet

The study sought to obtain the views of the respondents on how Accessibility of Internet affects the adoption of ecommerce by sunflower SMES. The results of the analyzed data on this are shown in Table 4.6 below. The analysis reveals that most of the respondents agreed that challenges in accessing the Internet are the main obstacle for sunflower farmers’ quest to adopt E-Commerce. The analysis further reveals that 36 (60.0%) of respondents strongly agree on this, 40 (40.0%) just agree, 8% of the respondents were indifferent. In addition, 16 (16.0%) disagree on this as shown in table 4.4 below.

Table 4. 5 Respondents on accessibility of Internet

|  |  |  |  |
| --- | --- | --- | --- |
|   | Frequency  | Percent  | Cumulative Percent  |
| Strongly agree  | 36  | 36.0  | 36.0  |
| Agree  | 40  | 40.0  | 76.0  |
| Indifferences  | 8  | 8.0  | 84.0  |
| Disagree  | 10  | 10.0  | 94.0  |
| Strongly disagree  | 6  | 6.0  | 100.0  |
| Total  | 100  | 100.0  |   |

**Source:** Researcher, 2022

### 4.4.2.5 The relationship between variables

The relationship existing between the two variables developed in the study was first presented by the model summary of the study. It is represented by different outcome variables such as R, R-square, which indicate the degree of respondents’ response to the question, the ANOVA, which indicates the relationship between variables, and the regression coefficient, which indicates the coefficient of the relationship between the developed variables. Its large value indicates a strong relationship.

Table 4. 6 Regression Model summary

**Model Summaryb**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .976a | .953 | .947 | .28043 |

**Source:** Researcher, 2022

1. Predictors: (Constant), Price of product online is low,

Limited financial resources, Accessibility of Internet, Acquisitions cost

1. Dependent Variable: Adoptions of e-commerce among sunflower SMEs

With R-value approaching one, the relationship between variables is also high. In the findings of this study, it reveals the R-value of .976, which is almost 1. This shows the positivity between the two variables, that is sunflower farmers economic factors as an independent variable, and adoption of E-Commerce by sunflower farmers as a dependent variable. The R-square value indicates the coefficient of determination is 0.953, which means 95.3% of the independent variables affect adoption of E-Commerce to sunflower farmers. In addition, this means at least 95.3% of the variable has been included in this study, and the remaining, which is only 4.7%, may have not been included in the study.

The coefficients of regression between sunflower SMEsEconomic factor and E-Commerce adoption have been summarized as below:

Table 4. 7 Regression Coefficients

**Coefficientsa**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model |  | Unstandardized Coefficients | StandardizedCoefficient | t | Sgf  |
|  |  | B | Std. Error | Beta |
| 1 | (Constant) | 072 | 119 | .009 | .607 | .547 |
|  | Limited financial resources | .012 | .081 | .428 | .146 | .884 |
|  | Acquisitions cost | .366 | .101 | .040 | 3.636 | .001 |
|  | Accessibility of Internet | .012 | .076 | .011 | .154 | .879 |
|  | Price of product online is low | .609 | .096 | .601 | 6.349 | .000 |

**Source:** Researcher, 2022

a. Dependent Variable: Adoptions of e-commerce among SMEs

From table 4.4 above, it shows that, for the independent variables namely limited financial resources, acquisition cost, maintenance of E-Commerce, accessibility of internet and price of the products online being low; it results into a beta value of .009, .428, .040. .011, and .601, which translates into a positive correlation between these variables and E-Commerce adoption among SMEs. A constant value of 0.072 was obtained from the analysis as demonstrated in the above table, which formulates a relationship between these variables, and the resultant regression equation is as below:

ed=.012ls + .366aq +.012ai + .609po + 0.072

Where by ed – E-Commerce adoption ls – Limited resources aq– Acquisition cost *mc*– Maintenance cost ai – Accessibility of internet *po* – Price of sunflower product online

From the above regression equation, the findings show that by improving limited financial resources, acquisition cost, maintenance cost of E-Commerce, accessibility of internet and price of the products online by 1%, then E-Commerce adoption will be improved by (0.012+0366 +0.012+ 0.609 +0.072) as shown on the equation above.

### 4.4.3 Objective three

To examine to what extent do legal factors affect sunflower adoption of E-Commerce. The resulting findings, the in-depth analysis and follow-up discussions are in the following subsection.

### 4.4.3.1 Support from Government / Externalities

The respondents also mentioned that, support from the government / externalities is another factor that seems to have high influence on the adoption of Ecommerce among sunflower SMEs. The respondents mentioned that of late they have not been satisfied by the kind and level of support that they receive from the Government, which they claim to be among the top factors that discourages them from adopting E-Commerce. As per the results of the analysis, respondents agreed with this in their majority.

From the analysis of data as presented in Figure 4.11 below, it shows that the majority of the respondents agreed that the government support is one of the factors that had influence on the adoption of E-Commerce among sunflower SMEs. The analysis reveals that (34.0%) of the respondents strongly agreed, (36.0%) of the respondents just agreed on this, (10.0%) of the respondents remained neutral with this, (8.0%) of the respondents disagreed on this, while the remaining respondents, constituting (12.0%) of the respondents strongly disagreed with the findings.



 Figure 4. 11 Respondents on Support from the government

**Source:** Researcher, 2022

### 4.4.3.2 Taxation policies on E-Commerce

Taxation is among the challenges that most sunflower SMEs that operate in developing countries experience. With reference to this, the respondents were asked if Taxation policies on E- commerce had impact on E-Commerce adoption in sunflower businesses, the analysis reveals that the majority of respondents agreed that taxation has a significantly big impact on the adoption of E-Commerce among sunflower SMEs. Figure 4.13 below illustrates the responses:

From the analysis of data in figure 4.13 above, it shows that a high proportion of the responses agreed on Taxation policies affecting adoptions of E-Commerce among sunflower SMEs, this constituting about 66 (66%) who agreed on this, (26.0% strongly agreed, and 40.0% just agreed); 6.0% of the respondents neither agreed nor disagreed, while only a few respondents, equivalent to 24 (24.0%) of respondents disagreed that taxation on E-Commerce had impact on adoption of E-Commerce among sunflower SMEs.



Figure 4. 12 Respondents on Taxation policies on e-commerce

**Source:** Researcher, 2022

### 4.4.3.3 Level of awareness of E-Commerce

As it was noted in the review of literature, the previous study found out that in most areas the level of awareness of E-Commerce is not so high and hence could have effect on E-Commerce adoption by most of SMEs. Now, depending on the nature of the SME, the researcher asked them if the level of awareness of E-Commerce affects the adoption of E-Commerce on sunflower business. The analysis reveals that a high proportion of the responses on level of awareness agreed. The results of the analyzed data on this are as shown in Figure 4.15 below: And analysis shows that the majority agreed, in which 34 (34.0%) of the respondents agreed, (34.0% strongly agreed and 28.0% just agreed), other 24 (24.0%) of the respondents were indifferent, and only 14 respondents equivalent to (14.0%) of the respondents disagreed with the findings.



Figure 4. 13 Respondents on the level of awareness of E-Commerce

**Source:** Researcher, 2022

### 4.4.3.4 The issue of Intellectual property

The study checked with the respondents to give their views on if the issue of Intellectual property is a hindering factor on the adoption of E-Commerce among SMEs in Tanzania. When the respondents were asked about this, the results indicated a high proportion of the responses agreed on intellectual property. The results of the analyzed data on this are as shown in table 4.10 below. From the analysis of the data as summarized and presented in Table 4.10 above, it shows that (24.0%) of the respondents strongly agreed on this, 28.0% respondents just agreed; the two, i.e. strongly agreed and just agreed, represent a high proportion of the findings. (16.0%) of the respondents neither agreed nor disagreed on this, (18.0%) disagreed on this, while the remaining respondents, about (14.0%) strongly disagreed with this.

Table 4. 8 Responses on the issue of Intellectual property

|  |  |  |
| --- | --- | --- |
|   | Frequency | Percent  |
| Strongly agree  | 24  | 24.0  |
| Agree  | 28  | 28.0  |
| Indifferences  | 16  | 16.0  |
| Disagree  | 18  | 18.0  |
| Strongly disagree  | 14  | 14.0  |
| Total  | 100  | 100.0  |

**Source:** Researcher, 2022

### 4.4.3.5 Relationship between variables

A measurement of the relationship that exists amongst the variables was taken using a model summary. The obtained large value exhibits a strong relationship. The R square value of 0.970 as shown in the table below concluded on a positive relationship between legal variables as independent variables and sunflower SMEs adoption of E-Commerce. The value of the R-square indicating coefficient of determination is 0.941, which implies 94.1% of the independent variables affect E-Commerce adoption by sunflower SMEs. In addition, this means at least 94.1% of the variable had been included in this study, and the remaining, which is only 5.9% might have not been included in this.

 Table 4. 9 Regression Model summary

**Model Summaryb**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .970a | .941 | .938 | .30247 |

1. Predictors: (Constant), Level of awareness of e-commerce to sunflower farmers, Support from government/ externalities, Taxation policies on e- commerce, The issue of Intellectual properties
2. Dependent Variable: Adoptions of e-commerce by SMEs

**Relationship between variable**

Moreover, when the regression analysis between independent and dependent variables was done, it produced the following findings: A regression analysis between the independent and dependent variables produced the following as the finding results:

Table 4. 10 Regression Coefficients

**Coefficientsa**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model |  | Unstandardized Coefficients | StandardizedCoefficient | t | Sgf  |
|  |  | B | Std. Error | Beta |
| 1 | (Constant) | 120 | .139 |  | .858 | .396 |
|  | Support from government/ externalities | .035 | .034 | .040 | 1.025 | .311 |
|  | Taxation policies on e- commerce | .543 | .114 | .547 | 4.760 | .000 |
|  | The issue of Intellectual properties | .509 | .107 | .591 | 4.743 | .000 |
|  | Level of awareness of e-commerce | .226 | .047 | .256 | 4.763 | .000 |

a. Dependent Variable: Adoptions of e-commerce among SMEs

**Source:** Researcher, 2022

Table 4.12 above, shows that the independent variables government support, taxation policies, and issue of intellectual property resulted into the beta value of 0.040, .547, .591, and .256 respectively, which exhibits a positive correlation between these variables and adoption of E-Commerce among SMES. As per the above table, the analysis further shows a constant value of 0.120 in which a formulation of a relationship between these variables will give out the following regression equation:

*ed=.035gs + .543tp + .509ip + .226la + 0.120*

***Where by***

*ed* – ecommerce, adoptions

 *pd* –Governments support

*uf* – Intellectual properties

*bp* – Level of awareness

*ps* – Products easily adaptable

### 4.4.4. Objective four

To evaluate the extent to which the technical infrastructure affects sunflower farmers and SMEs on adoption of E-Commerce. This objective is answered by looking at the following variables.

### 4.4.4.1 Confidentiality to customers

The study checked with the respondents to obtain their views on if the Confidentiality of customer information is the hindering factor in adoption of ECommerce to sunflower SMEs**.** The analysis discloses that high a proportion of the responses agreed on confidentiality to customers affecting adoption of E-Commerce among SMEs. The results of the analyzed data on this are as shown in Table 4.13 below. The analysis discloses that, 60.0% of those respondents who responded to this question agreed, 26.0% of the respondents strongly agreed, and 34.0% just agreed. The study found out further that 14.0% of the respondents remained neutral, 14.0% of the respondents disagreed and the remaining 12.0% strongly disagreed on this.

Table 4. 11 Responses on confidentiality to customers

|  |  |  |
| --- | --- | --- |
|  | **Frequency**  | **Percent**  |
| Strongly agree  | 26  | 26.0  |
| Agree  | 34  | 34.0  |
| Indifferences  | 14  | 14.0  |
| Disagree  | 14  | 14.0  |
| Strongly disagree  | 12  | 12.0  |
| **Total**  | **100**  | **100.0**  |

**Source:** Researcher, 2022

### 4.4.4.2 Accessibility of internet

The study checked with the respondents to obtain their views on if accessibility of internet could be one of the challenges facing adoption of E-Commerce among sunflower SMEs. The analysis reveals that, 36 (36.0%) of the respondents strongly agreed on this, (38.0%) just agreed, 13 (13.0%) of the respondents remained neutral with this, while only 5 (5.0%) of the respondents disagreed on this as shown in Figure 4.16 below.



 Figure 4. 14 Responses on accessibility of internet

**Source:** Researcher, 2022

### 4.4.3.3 Power supply and infrastructure

The respondents also mentioned that, power supply and infrastructure is another challenge that faces most of them; and hence failing their efforts to adopt E-Commerce to SMEs. The respondents mentioned that, in most areas’ mains power is not stable, while in other areas internet is also not very stable or reliable. The analysis discloses that a large percentage (majority) of the respondents agreed on this. Figure 4.14 below offers a summary of the findings: From the analysis of data as summarized and presented in Figure 4.17 above, it shows that (30.0%) of the respondents strongly agreed on this, (50.0%) respondents just agreed, and only (8.0%) of the respondents disagreed with this.

 **Figure 4. 15 Respondents on Power supply and infrastructure.**

 **Source:** Researcher, 2022

### 4.4.3.4 Technical support

From the analysis of data as summarized and presented in Figure 4.18 below, it shows that (30.0%) of the feedback from respondents indicates strongly agreed on this, (42.0%) respondents just agreed, (10.0%) respondents remained neutral, (16.0%) respondents disagreed, while the remainder of the respondents, (2.0% **Figure 4. 16 Responses on technical support**

 **Source:** Researcher, 2022

**Relationship between variables - Regression Model**

The following table exhibits the relationship between variables, the first table presents model summary.

Table 4. 12 Regression Model summary

**Model Summaryb**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .966a | .934 | .928 | .32744 |

1. Predictors: (Constant), Technical supports, Power supply and infrastructure, Accessibility of internet, Confidentiality to customers
2. Dependent Variable: Adoptions of e-commerce among

Sunflower SMEs

**Source:** Researcher, 2022

From the outcome of the analysis of data, the R-value is .966. This value demonstrates a strong relationship that exists between the technical infrastructure variable and adoption of E-Commerce by SMEs. Moreover, the explanation offered by coefficient of determination is that 93.4% of the technical and infrastructural factors affecting adoption of E-Commerce by SMEs have been clarified in this study, while the remainder, 6.6% is explained by other variables that are not put into consideration for the sake of this case study.

The R-square value from the data is .966 indicating a strong correlation between the infrastructure variable and adoption of E-Commerce by sunflower SMEs. The R-square value that indicates the coefficient of determination is .934, which means 93.4% of the independent variable impact’s adoption of E-Commerce to sunflower SMEs. In addition, this means at least 93.4% of the variable had been included in this study, and the remaining one, which is only 6.6% might have not been included.Moreover, the regression analysis of the coefficients between the independent and dependent variables produced some results as follows

Table 4. 13 Regression Coefficients

**Coefficientsa**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model |  | Unstandardized Coefficients | StandardizedCoefficient | t | Sgf  |
|  |  | B | Std. Error | Beta |
| 1 | (Constant) | .281 | .176 |  | 1.592  | .118 |
|  | Accessibility of internet | .240 | .083 | .232 | 2.880 | .006 |
|  | Confidentiality to customers | .577 | .077 | .611 | 7.489 | .000 |
|  | Power supply and infrastructure | .249 | .096 | .153 | 2.581 | .013 |
|  | Technical supports | .110 | .049 | .098 | 2.236 | .030 |

a. Dependent Variable: Adoptions of e-commerce among SMEs

 **Source:** Researcher, 2022

The summary of the data analysis on regression model demonstrates that for the independent variable accessibility of internet, confidentiality to customers, power supply and infrastructure and technical support resulted into, the beta value of 0.232, .611, .153, and .098 which exhibits a positive correlation between these variables and organizational performance. From the table above the analysis shows a constant value of 0.281 and thus formulating the following relationship that exists between the variables:

*ed=.240ae+ .577cs + .249ps +.110ts + 0.281*

***Where by***

*ed* – Adoption of ecommerce

 *ae* – Accessibility to internet

*cs* – Confidentiality to customers

*ps* – Power and infrastructural

*ts* – Technical support

From the above regression equation, the findings show that by improving accessibility of internet, customer confidentiality, power supply & infrastructure, and technical support by 1 unit, then the adoption of E-Commerce to sunflower farmers will be improved by (0*.*240+ 0.577 + 0.249 + 0.110 + 0.281). The summary of the data analysis on regression model shows that for the independent variables accessibility of internet, confidentiality to customers, power supply & infrastructure, and technical support resulted into beta values of 0.232, .611, .153, and .098 respectively, which exhibits a correlation that is positive between these variables and adoption of E-Commerce. The analysis from the above table shows a constant value of 0.281, which can be used to clarify the relationship between these variables through formulating the following relationship exhibit:

## 4.5 Discussion of the study as per research objectives and findings

**Objective one;** this objective examined how the sunflower farmers characteristics and behaviour on the adoption of E-Commerce. This objective is answered by the analysis, findings, and discussions about the following variables:

Several factors relating to sunflower SMEs own characteristics that seem to have impacts on ECommerce adoption among sunflower SMEs had been found and analyzed. The study found out that the perception among the sunflower business operators on the adoption of E-Commerce is another factor that, in most cases, appears to be hindering adoption of E-Commerce among sunflower SMEs. This has been concluded by the majority of the respondents, whereby about 68.0% of all respondents accepted this.

The study by Slachlon (2018) on challenges facing SMEs in competing in the global markets, taking Kenya’s perspective revealed that in most areas many SMEs had a bad perception over international markets, and over the adoption of ICT among themselves. The study further revealed that, most of SMEs had a negative perception regarding this. The findings also reveal that, SMEs technological competency is another factor that hinders most of SMEs from adopting E-Commerce. The analysis reveals that 56% of the respondents, which constitute the majority of the respondents, agreed on this. The findings reveal that in most cases, most of the owners of small businesses operate their businesses by themselves in which many do not have the necessary capability to adopt and run business over E-Commerce systems. In a few cases, the study finds out that the majority of those SMEs who had successfully adopted E-Commerce, about 80%, have hired technical professionals to assist and support them in running their businesses on E-Commerce platforms.

The findings of the study also revealed that, management support is another factor that has a negative effect on sunflower SMEs pushing them away from adopting E-Commerce. The study finds that, in most cases businesses that are not operated by their owners face many support challenges while trying to adopt E-Commerce. The respondents who are just day-to-day operators and not owners of the SMEs complained that their managements do not support them in adopting E-Commerce*.* Similarly, the findings of the research conducted by Welmon, (2017), indicated that SMEs operating in third-world country economies had failed to adopt ICT due to poor management support. This is further supported by the study conducted by Millita (2011), which found out that most businesses do not perform due to poor management support.

Perceived security on sunflower E-Commerce was also found out to be another factor that affects the adoption of E-Commerce among SMEs, especially in developing countries. The study reveals a high proportion of the feedback, constituting 66% had agreed on this. The analysis reveals that some of the owners do not trust the securities especially when it comes to online transactions or payments. Similarly, the findings correlate to the findings by Menon, (2018), which found out that most of businesses in developing economies are used to manual payment systems due to a bad perception/belief among SME operators regarding online payments.

**Objective Two;** This objective examined how the sunflower farmers’ economic factors affect adoption of E-Commerce the adoption of E-Commerce. This objective is answered by the analysis, findings, and discussions about the following variables.

The findings reveal several obstacles that directly hinder sunflower SMEs from adopting E-Commerce. The study finds limited resources that sunflower SMEs had as the main obstacle affecting SMEs in adopting E-Commerce; this had been agreed by 65% of all respondents from the study. These findings relate to the study by Milton (2017), which also revealed similar results that in developing economies most of the small businesses fail to adopt E-Commerce due to limited availability of resources. These findings also imply that sunflower SMEs need to have adequate resources for them to be able to effectively adopt E-Commerce.

Furthermore, the study found out that the cost of acquisition is yet another factor that affects sunflower SMEs when it comes to adoption of E-Commerce. The analysis revealed that 59% of all respondents agreed either strongly or just agreed. These findings relate to the findings in the study conducted by Haen (2015) revealing a positive relationship that exists between E-Commerce acquisition cost and the adoption of E-Commerce among SMEs. These findings also imply that many of SMEs fail in their attempts to adopt E-Commerce because of high cost of adoption. The study mentions that sometimes sunflower farmers fail to adopt E-Commerce due to cost-related issues; this problem faces most SMEs operating in developing countries.

Accessibility of internet had also been found to be another factor that affects most of sunflower SMEs from adopting E-Commerce. The analysis discloses that 76.0% of those who responded also concurred with these findings, and respondents mentioned that in most cases the internet had been very challenging to most of the sunflower SMEs especially those operating far from town/city centers.

These findings imply that there is a need for the Government and other stakeholders to develop good infrastructure to enhance E-Commerce adoption among small and medium businesses. In the middle of the interview, one respondent revealed that ‘the internet is not stable all the time, sometimes it is okay and sometimes it is not. The findings are alike to those obtained by Millita (2018) conducted in Uganda, which found out that in most cases most of the businesses in developing countries face the challenge of internet infrastructure when trying to adopt E-Commerce. The study mentioned that in most cases, the infrastructure is very well developed in big towns & cities, and that challenges start to emerge as you are moving away from town centres to rural areas. This was also concluded in a study conducted by Ngaboru (2012) in Morogoro region.

**Objective three**,to examine to what extent do legal factors affect sunflower SMEs adoption of E-Commerce. The resulting findings, the in-depth analysis and follow-up discussions are in the following subsection.

 The findings reveal that support from the government / externalities are another very important aspect and factor that will attract many SMEs operating on sunflower business to adopt E-Commerce. The analysis reveals that most sunflower SMEs cannot stand by themselves on adopting ECommerce and hence they need a lot of support from third party. The study found out that in most cases sunflower SMEs tried to adopt but sometimes they failed especially for those micro-businesses. The study by Lwisa (2016) on the challenges facing Entrepreneurs in developing countries, using the case of Tanzania, revealed that most of the SMEs fail to compete in the global markets due to lack of support from the government and other third institutions. The study mentioned that people with a low level of education own most of the small businesses operating in developing countries, so they need a lot of support for their businesses to stabilize and excel.

Furthermore, the study reveals that most of the business operators fear the issue of Taxation on E-Commerce, the study finds that most of the operators believe that there is a tax burden when sunflower SMEs are about to adopt E-Commerce. The analysis has revealed that 66% of the respondents agreed on this, 26.0% strongly agreed, and 40.0% just agreed. These findings relate to the findings by Slachlon (2018) who found similar findings that in most cases taxation in one of the SMEs burdens in most of developing countries. The study also shows the impact of Taxation on the performance and survival of small businesses.

Lastly, the study by Welmon, (2018) in northern Ghana, revealed that most of the small business institutions in Ghana fail in their operations and also fail to compete in the global market owing to the fact that most of them operate manually. The study further finds that in order for the business to compete in the global market, adoption of E-Commerce is necessary, as some of the payments / transactions need to be done online with customers from different parts all across the world. The study finds most of the African businesses fail in this kind of business because they do not fully adopt E-Commerce. The study added that, some businesses manage to advertise their products online and secure customers; but when it comes to ordering and payment, that is when challenges start to emerge, because choosing the appropriate method of payment becomes a real headache.

**Objective four;** To evaluate the extent to which the technical infrastructure affects sunflower farmers and SMEs on adoption of E-Commerce. This objective is answered by looking at the following variables.

The feedback from the respondents indicates that power supply and infrastructure are other factors that affect most sunflower SMEs when it comes to adopting E-Commerce. The respondents mentioned that they believe there is poor infrastructure to support their businesses in adopting E-Commerce. This was supported by 92% of all respondents. The implication of these findings is that there is a very big infrastructural challenge that is facing small businesses from adopting E-Commerce. The study by Simon (2017) in Kenya conducted on the impact of ICT on the performance of SMEs in the global market revealed that in most cases most of the small businesses had failed to adopt ICT due to availability of poor infrastructure.

Furthermore, the study reveals that technical support is another challenge that causes most of the businesses, especially small businesses, to fail to adopt E-Commerce. The analysis reveals that almost 72% of the respondents agreed on this. This is the highest proportion of the study. The analysis further reveals that a high proportion of the respondents face the challenge of technical support in adopting E-Commerce. The technical support mentioned by the respondents includes installations, networking, and other infrastructural and help-desk support. The study by Andress (2016) found out that support to SMEs business operations is one of the obstacles that cause most of small businesses to fail in the initial stage of their operations.

Confidentiality of customer information is another challenge that had been mentioned by most of the respondents, which seems to have an impact on the adoption of E-Commerce by most of sunflower SMEs. The analysis reveals that the majority of customers need privacy and in some cases the use of E-Commerce exposes some of their details; this has made some of the sunflower SME operators not to adopt E-Commerce at all. The analysis further reveals that 60.0% of the respondents agreed on this. These findings are similar to those by Ngonke, (2018), who found out that confidentially is having a positive relationship with adoption of E-Commerce among sunflower business operators.

Furthermore, all the variables of technical infrastructure were proven to be positive by the regression model and shown to have an impact on the adoption of ECommerce among sunflower SMEs. This was proven by a model summary test which showed a high positive correlation between these variables and E-Commerce adoption; and also, regression coefficients which developed a positive relation coefficient between variables and adoption of E-Commerce among sunflower SMEs.

# CHAPTER FIVE

# SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMENDATIONS

##  5.1 Introduction

This is the last chapter of the study, which summarizes the findings of the study, it also provides the conclusion based on the findings as guided by the study objectives, and also provides the recommendations based on the findings of the study. All three, the summary of the study, the conclusion, and the recommendation have been provided based on the findings and research objectives that guided this study.

### 5.2 Summary of the Findings

The findings reveal that, sunflower SME's economic factors have a direct impact on sunflower SME's adoption of E-Commerce. The findings further reveal that factors as sunflower SME’s limited financial resources, cost of acquisition of E-Commerce, maintenance cost of E-Commerce, accessibility of Internet by sunflower SMEs, and the fact that the price of products that are sold online is always low, have an impact on sunflower SME’s decision to adopt E-Commerce. The study has concluded that, these factors have been a significant contributor in making many small businesses fail to adopt E-Commerce. Moreover, the regression analysis has concluded that there is a positive relationship between these variables.

Moreover, the findings reveal that sunflower SME's own characteristics and behaviour has been another challenge that hinders many SMEs from adopting E-Commerce. Other factors related to characteristics of sunflower SMEs in their operations, which have been concluded to also have an impact on the adoption of E-Commerce by SMEs, include perception towards technology, SMEs technological competence, managements support, perceived securities of E-Commerce systems, and the nature of productsinvolved. These factors have been found to have an impact on sunflower SMEs decision to adopt E-Commerce. These factors have also been explained by different literatures such as Millita (2017), Green (2017), Mengoy, (2013), and also Zhankang (2018). The regression analysis conducted also has proven a positive relationship between all the variables of SME's own characteristics and the adoption of E-Commerce by sunflower SMEs.

Furthermore, it concluded that accessibility of internet, confidentiality of customer information, power supply and infrastructure, and technical support are other factors that appear to have an impact on sunflower SMEs when it comes to adopting E-Commerce. The study also concluded that, in most cases the infrastructure problem is the main challenge that faces most of sunflower SMEs, especially those operating in developing countries. Several studies have also mentioned similar results. The study’s regression analysis model also has proven a positive relationship between these variables of power and infrastructure and their impact on E-Commerce adoption among sunflower SMEs.

The study has found other factors related to social-cultural and legal factors that also have an impact on the efforts of SMEs in adopting E-Commerce. The analysis revealed the following factors to have a high impact on adoption of E-Commerce among SMEs; Support from the government / externalities, Taxation policies on ECommerce, Intellectual property, and Level of awareness of E-Commerce. Most of these variables have been found to have an effect on sunflower SMEs from external, so it is important for SMEs to consider them carefully.

## 5.3 Conclusion of the study

From the findings, the researcher concludes that most of sunflower SMEs are faced with challenges when it comes to adoption of E-Commerce, which apart from making them unable to compete in the market; they also threaten the survival of most of these businesses. Several factors have been found to have an impact on sunflower SMEs desire to adopt E-Commerce, and generally these factors according to the findings of the study, they have been categorized into four main groups which are: sunflower SMEs own characteristics, sunflower SMEs economic factors, power and technical infrastructure, and cultural and legal factors. Several studies such as Namisango (2010), Magiri (2015), Suma (2012), Panjay (2018), and (Millita, 2017) also mentioned these factors.

These four mentioned factors are the key reasons that affect the adoption of E-Commerce by most of sunflower SMEs and in each of these variables there are other determinant variables. It is clear that SMEs in developing countries need to simplify their business operations through adoption of E-Commerce, which will help increase their competitive advantage and make them perform well in the global market.

###  5.4 Recommendation of the study

This section provides some recommendations with regard to research objectives, research hypothesis, and research findings, after the analysis of the respondents’ views. The recommendations have been given as per research findings.

The study recommends that small business sunflower operators should take seriously the adoption of E-Commerce. The importance of E-Commerce must never be ignored by sunflower SMEs, because by adopting E-Commerce, it increases their competitive advantage. The analysis further reveals that the cost of acquisition and some operational and maintenance costs are among the challenges that hinder these sunflower SMEs from adopting E-Commerce. This implies that institutions need to have a specially set budget for this, and later will have more profitability. The study further recommends that SMEs need to consider E-Commerce as one of the important aspects of their daily operations.

The Government needs to improve all infrastructures that will enhance the adoption of E-Commerce by sunflower SMEs. Currently, the situation is not so good, from the availability of internet, power supply, and other supportive infrastructure. By improving the infrastructure, it will create a favorable condition that will attract many more sunflower SMEs to invest in adoption of E-Commerce, bearing in mind the advantages of ECommerce that most of the sunflower SMEs does not know about.

The study also recommends that sunflower SMEs need some time to self-evaluate their operations to understand the main challenges they face and find the best solutions. The study found some of the factors are sunflower SMEs internally related factors. These factors included management support, and staff incompetence, which can be easily eliminated by the sunflower SMEs themselves. Sunflower SME operators need to be trained on how to solve their own generated business problems rather than waiting for someone else to come and try to solve for them. Such trainings need to be done continuously and frequently to keep freshening their skills.

On the government side, sunflower SMEs being a very important contributor in economic development, regulations and laws enactment in support of sunflower SMEs must be considered and reviewed over time in order to support them in their quest to adopt ECommerce. These laws should be in favor of and aimed at encouraging sunflower SMEs so that most of them can adopt E-Commerce, because the more they adopt the more will the government revenue increase and hence boost economic development.

Tax laws that govern adoption of E-Commerce and the associated activities need to be reviewed too in regard to adoption of E-Commerce by sunflower SMEs. Most of small business operators complained that tax is too high to SMEs in such a way that it affects their quest to adopt E-Commerce. The tax authorities should review taxes from both sides of the E-Commerce perspective. This will be an important milestone because reducing taxes translates into a significant reduction of the burden of operating cost to sunflower SMEs, which will result into ease of adoption of E-Commerce by most SMEs, since cost has been a common complaint in almost all discussions with the business operators.

The study also recommends that enough trainings and education must be given to business operators / managers in regards to E-Commerce. The study has found out that most of business operators think E-Commerce is only about social media, forgetting other aspects such as email marketing, e-payments, digital wallets, electronic tickets, banner ads, etc. The trainings need to be very well prepared and given out to the business operators / managers. These trainings need to cover all perspectives from what E-Commerce is, to its advantages, challenges, and even how to make effective use of it. These trainings can be purposely done in schools, colleges, and universities to ensure that graduates leave school while already understanding the core concepts behind E-Commerce and their applicability in simplifying business processes and operations with an aim of improving product and service delivery.

**5.5 Policy Implications of the Findings**

The findings of this study have significant implications for policymakers, business owners, and stakeholders in the sunflower SME sector. First, the study highlights the urgent need for financial interventions, such as subsidized loans and grants, to help SMEs overcome economic barriers to E-Commerce adoption. Policymakers should design financial support programs that specifically target SMEs, ensuring that limited financial resources and high maintenance costs do not hinder technological advancements in the sector. Additionally, efforts should be made to improve access to affordable and reliable internet services, particularly in rural areas where many sunflower SMEs operate.

Second, the findings indicate that SME owners' perception and behavior towards technology play a crucial role in determining E-Commerce adoption. This underscores the need for targeted training and awareness programs to improve digital literacy among SME owners and managers. Government agencies and industry associations should collaborate to provide workshops and mentorship programs that focus on technological competence, cybersecurity awareness, and the benefits of digital transformation. Enhancing trust and security in E-Commerce platforms is also essential, as concerns over data protection and fraud were identified as major obstacles to adoption.

Finally, the study suggests that infrastructure and regulatory factors significantly influence the willingness of sunflower SMEs to adopt E-Commerce. Governments and relevant authorities should invest in strengthening ICT infrastructure, ensuring stable power supply, and providing technical support services to SMEs. Additionally, legal frameworks must be reviewed and refined to create a favorable environment for E-Commerce activities. Taxation policies should be structured to encourage SME participation in digital markets, while intellectual property laws should be reinforced to protect SMEs from online fraud and unfair competition. Addressing these challenges will not only boost E-Commerce adoption but also enhance the overall competitiveness and sustainability of sunflower SMEs in the digital economy.

**5.6 Limitation of the study**

The limitations experienced when conducting research were;

Poor responses of the respondents, some of respondents were having hard time when expressing their information especially the one concerning income level.

Another problem was the sample size many of the respondents were not ready to answer the questions due to lack of seriousness.

**5.7 Delimitation of the study**

By explaining in detail, the purpose of the study and its importance of this study to the whole community the individual households were well understood and they were ready to participate fully in this study, they were serious and being able to share their personal information such as Income Level, Marital status and their Suggestion on E- Commerce in Agricultural sector.

## 5.8 Area for further research

As a result of different limitations, such as Financial and Time constraints, the researcher had some limitations in areas that can be further taken into consideration. I recommend the following areas to be taken into consideration since they need further study. These areas were limited at the time of conducting my research due to restrictions caused by lack of enough time and funds.

Further study needs to be conducted in consideration of a comparative study between Small Businesses and Medium Businesses; this is because in this study, they were both treated in sunflower business, but it was found out that their adoption differs depending on the size of the business operations.

Since the study was done with a consideration of sunflower business operators as key respondents, further study should be conducted with a customer perspective in mind to examine how they perceive E-Commerce services by sunflower SMEs.

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# APPENDICES

**APPENDIX I: QUESTIONNAIRE**

**INTRODUCTION**

Dear Respondents,

My name is **JALALA KIZIGO**, a student at Open University of Tanzania pursuing Master’s Degree of Businesses Administration (MBA). I am conducting this study as one of the basic requirements for an award of Master’s Degree of Businesses Administration (MBA) of Open University of Tanzania. Below is a list of questions intended to collect information only for academic purposes on the study entitled, ***“Factors influencing adoption of E- Commerce in Agricultural sector Tanzania” A case of sunflower farmers Dodoma”***. You are kindly requested to take your time to fill this questionnaire according to the level of your experience and skills. I guarantee maximum privacy of the information you provide and I would like to acknowledge and appreciate your involvement on this regard towards the success of this study

**Instructions:**

* Please complete the attached questionnaire and return it accordingly.
* Do not write your name anywhere in this paper.
* For multiple-choice questions tick only the chosen item(s) and for explanations questions, the space to fill in is given below where you are required to write.
* Tick **(√)** the appropriate answer in the box opposite to the correct answer OR explain briefly as per instruction of the respective question.

Thank you in advance for your cooperation.

**Basic information**

1. Gender ………………………….
2. Age
3. Below 25 yrs
4. 25 – 39 yrs
5. 39 – 49 yrs
6. Above 50 yrs
7. For how long have you been dealing with sunflower farming
	1. Less than 2 years
	2. 2 – 5 years
	3. 6 – 10 years
	4. More than 10 years

1. What is your education level?…………………
	1. Primary/secondary
	2. Diploma holder
	3. Degree holder
	4. Master or above 5.
2. What amount of capital has been invested in sunflower farming?
3. Below 5 million
4. 5 mil – 49 million
5. 49 mil – 200 million
6. Above 200 million

**Questions as per specific research objectives**

**If YES in question 5 above, please fill in the following tables**

1. What do you think are farmers economic related factors that affect sunflower farmers on adoption of E-Commerce? Please indicate your response by marking with a tick (√) the appropriate condition statement which best describes each facility. Whereby

1-Strongly Agree; 2-Agree; 3-Indifference; 4-Disagree; 5-Strongly Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | 1  | 2  | 3  | 4  | 5  |
| The financial resources that the farmers had is very limited  |   |   |   |   |   |
| The cost that is incurred on the adoptions of E-Commerce  |   |   |   |   |   |
| The maintenance and operations cost of E-Commerce  |   |   |   |   |   |
|  | Accessibility of the internet to both buyers and sellers |   |   |   |   |   |   |
|  |
| The nature of the price of products online is very low  |   |   |   |   |   |

1. What do you think are sunflower farmers own characteristic factors that affect their adoption of E-Commerce? Please, your response should be indicated by marking with a tick (√) at the fitting condition statement that best describes each facility. In which;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  1  |  2  |  3  |  4  | 5  |
| Sunflower farmers perception towards technology  |   |   |   |   |   |
| Sunflower farmers management support  |   |   |   |   |   |
| Sunflower farmers technological competence  |   |   |   |   |   |
| Perceived securities on E- commerce  |   |   |   |   |   |
| Nature of the products that are involved  |   |   |   |   |   |

If others not mentioned please fill in below

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1. What do you think are technical infrastructure related factors that affect Sunflower farmers adoption of E-Commerce? Please, your response should be indicated by marking with a tick (√) at the fitting condition statement that best describes each facility. In which;

1-Strongly Agree; 2-Agree; 3-Indifference; 4-Disagree; 5-Strongly Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | 1  |  2  |  3  |  4  | 5  |
| Accessibility of internet to both buyer and seller  |   |   |   |   |   |
| Confidentiality of customer information  |   |   |   |   |   |
| Power supply and infrastructure  |   |   |   |   |   |
| Reliability of the sign board  |   |   |   |   |   |
| Technical support  |   |   |   |   |   |

If others not mentioned please fill in below

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1. What do you think are social-cultural and legal related factors that affect Sunflower farmers adoption of E-Commerce? Please, your response should be indicated by marking with a tick (√) at the fitting condition statement that best describes each facility. In which;

1-Strongly Agree; 2-Agree; 3-Indifference; 4-Disagree; 5-Strongly Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | 1  |  2  |  3  |  4  | 5  |
| Support from government/ externalities  |   |   |   |   |   |
| The issue of Intellectual properties  |   |   |   |   |   |
| Taxation policies on e- commerce  |   |   |   |   |   |
| Level of awareness of E-Commerce  |   |   |   |   |   |
| Interactions between buyers and sellers  |   |   |   |   |   |

If others not mentioned please fill in below

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What recommendation would you give on adoption of E-Commerce by Sunflower farmers?

…………………………………………………………………………………

…………………………………………………………………………………

***Thank you for your response***