

**ASSESSMENT OF USE OF SOCIAL MEDIA AMONG SMALLHOLDER FARMERS IN
KIAMBU COUNTY**

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DECLARATION

This thesis is my original work and has not been presented for an award of a degree in any other University.

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DEDICATION

This publication is dedicated to my dear parents, Boniface Kinyua and Esther Njoki for their desire to see me advance in education.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BAKE	Bloggers Association of Kenya
CAK	Communication Authority of Kenya
CRS	Catholic Relief Services
FAO	Food and Agriculture Organization for United Nations
GDP	Gross Domestic Product
GoK	Government of Kenya
ICTs	Information Communication Technologies
IU	Intention to Use
KALRO	Kenya Agricultural and Livestock Research Organization
MEAS	Modernizing Extension and Advisory Services
MoAL&F	Ministry of Agriculture Livestock and Fisheries
NASEP	Kenya National Agricultural Sector Extension Policy
PEU	Perceived Ease of Use
PE	Perceived Enjoyment
PU	Perceived Usefulness
RoK	Republic of Kenya
SPSS	Statistical Program for Social Sciences
SCT	Social Cognitive Theory
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action

ABSTRACT

The economic importance of agriculture in Kenya cannot be overemphasized. Nonetheless, to succeed in agriculture and rural development action of masses of rural families who individually make decisions based on knowledge, facts, and technologies at their disposal is critical. In Kenya, ineffective dissemination approaches, expanding farmer population, low staffing and aging agricultural extension agents are major challenges to delivery of agricultural extension services. Social media provides huge opportunities and incentives that have potential to ease access to agricultural information, facilitate real time service delivery and enable wider farmer coverage. A number of social media initiatives aiming at enhancing access to agricultural technologies have been developed in the country. Despite the potential in social media, lack of awareness and low usage in the rural areas of developing countries have been documented. This study carried out an assessment of social media use in agricultural activities among smallholder farmers. The objectives were to: assess the level of social media familiarity and usage among farmers; analyse the social media platforms being used by farmers and purpose for use; assess the influence of farmers' demographic characteristics on awareness and usage of social media and assess how farmers' perception on the usefulness and ease of use of social media in agricultural activities influence their behavioural intention to use. Undertaken in Thika Sub-County of Kiambu County on 140 farmers, the study employed a formal survey. Researcher administered semi-structured questionnaires were employed to collect qualitative data. Data were analyzed using the Statistical Package for Social Scientists (SPSS) version 20.0. Descriptive results have been presented in form of tables of frequencies, percentages and bar charts. ANOVA tests helped to establish data relationships and statistical significance while multiple regression analysis predicted the influence of changes in independent variables on the dependent other variables. The study established low familiarity and usage of social media among the farmers which was majorly influenced by their

education level, age and sex. WhatsApp emerged the most popular platform while socially related activities were the major social media uses. The respondents generally expressed a positive attitude towards use of social media in accessing agricultural information. The study recommends social media awareness initiatives to enhance literacy levels among the farmers, employment of communication or social media officers responsible for managing social media accounts and development of social media specific policies and guiding principles to facilitate utilization in agricultural extension.

Key words: agricultural extension, smallholder farmers, information dissemination, social media, usage

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

1.1.1 Agricultural sector

Importance of agriculture in the overall development of Kenya's economy is clearly spelt out in a number of government policies including Kenya Vision 2030, Medium Term Plans and Agriculture Sector Development Strategy among others (MoALF, 2017). Besides being dominated by approximately 75% smallholder farmers (MoAL&F, 2015), the agricultural sector employs over 80% of Kenya's rural work force further providing more than 18% of formal employment. The economic pillar envisaged in the Kenya Vision 2030 enlists agriculture among the contributors of the projected ten percent annual growth rate (GoK, 2007). This is only feasible if smallholder farmers shifted from subsistence farming embracing innovative, commercially-oriented, and competitive practices generated through agricultural research (KALRO, 2017).

The Kenya Agricultural Research Act identifies research as a key component in the generation of new technologies, knowledge management and dissemination through which solutions for sustainable development of agribusiness are provided (RoK, 2013). For instance, the Kenya Agricultural and Livestock Research Organization (KALRO) generates a lot of knowledge, information, technologies and innovations. While improvement of agricultural productivity can only be realized through adoption of appropriate technologies, innovations and practices, the KALRO Strategic Plan documents low uptake of new knowledge by farmers citing ineffective linkages between research and the farmer (KALRO, 2017). Similarly, perpetual low agricultural production and insecure livelihoods are attributed to low adoption of the numerous existing technologies capable of increasing agricultural productivity, improving food, and nutrition as well

as income security (Kimenye & McEwan, 2014). According to FAO (2016), realization of agricultural and rural development is hinged on the action of the critical masses of rural farmers whose decision making on an individual basis is influenced by the knowledge, technologies and information at their disposal. A functional, innovative and responsive agricultural extension service is a key driver to the changing socio-economic conditions of the agricultural sector (MoALF, 2017).

1.1.2 Agricultural Extension

Agricultural extension has since 1960s been viewed as a means for bridging the knowledge gaps associated with technology adoption world over (Aker & Mbiti, 2011). Through agricultural extension farmers are provided with important information that is aimed at improving their knowledge base thus increasing their ability to optimize resources, ultimately enhancing productivity (Kimenye & McEwan, 2014). The general extension methods include use of specialists who provide diverse services to farmers and in some instances directly connecting the researcher to the farmer in the effort to achieve better targeting with new technologies that address specific circumstances facing agricultural communities (Aker & Mbiti, 2011).

Traditionally, dissemination of agricultural technologies in Kenya has been mainly achieved through the agricultural extension system entrenched in Ministry of Agriculture. With the promulgation of the Kenya Constitution 2010, agricultural research was placed under the National government while County governments were mandated with implementation, facilitation and provision of agricultural services (RoK, 2010). However, provision of agricultural extension services in Kenya is constrained by myriad of challenges including an expanding farming population, physical distances to be covered, access to new information and inadequate means of transportation required for mobility (Salau & Saingbe, 2008). The authors further observe that the

current personal face-to-face extension approaches have their own strengths and weaknesses with one major limitation being inability to cover all farmers of the community. Additionally, low staffing has been identified as a major weakness in the provision of agricultural extension services with the ratio of frontline extension agents to farmers estimated at about 1:1000 in relation to the ideal level of 1:400 resulting to a reduction in spatial coverage, targeting and efficiency of service delivery (MoALF, 2010). A study by Wabwoba and Wakhungu (2013) further records an extension staff to farmer ratio of 1:1500 in Kenya leading to limited provision of extension services in most parts of the country.

Additionally, the prohibitive cost of acquiring agricultural information through the traditional methods like visits, radio and newspapers create knowledge discrepancies that negatively impact on adoption of new agricultural technologies especially in developing countries (Aker & Mbiti, 2011). The aforementioned dissemination challenges hinder delivery of tested agricultural technologies key to ensuring realization of higher productivity and food security by a critical mass of smallholder farmers dispersed across the rural areas (Salau & Saingbe, 2008). While the population of smallholder farmers has been expanding, the number of extension workers in Kenya has been shrinking drastically thus creating the need for innovative initiatives to address the service delivery gap (Gakuru et al., 2009). It therefore becomes imperative to harness the existing and emerging information dissemination channels for improved service delivery (Kimani A., 2010).

1.1.3 Information Communication Technologies (ICTs) in Agricultural Extension

Information Communication Technologies (ICTs) have continued to register an exponential growth with computers, mobile phones, digital organizers, internet and wireless computing spreading all over the globe (Thirumavalavan & Garforth, 2009). With almost every single action in the modern world becoming increasingly dependent on the application of ICTs, the technologies

provide a promising means of delivering agricultural extension services where masses of farmers can be accessed (Kwadwo & Mekonnen, 2012). The authors further report that ICT enabled agricultural services offer great opportunities and can facilitate realization of empowered farming populations. Adoption and utilization of ICTs in the rural areas is enabling creation of informed communities thus improving agricultural progress. Social media, a unique and most recent form of ICTs is transforming the way people find news and information (Jijina & Raju, 2016).

1.1.4 Social media

The first ten years of the millennium witnessed the advent and subsequent fast diffusion of Web 2.0 leading to a proliferation of social interaction media sites such as Facebook, YouTube and Twitter (Obar, Jonathan, Wildman, & Steven, 2015). Web 2.0 is considered as the cumulative evolution in World Wide Web occasioning improved interactivity, usability, and user-generated content (DiNucci, 1999). Social media have been described as web based electronic tools that enable personal and informal communication among users through interaction, creation, sharing, retrieving, and exchanging textual, pictorial and video information as well as ideas (Suchiradipta & Saravanan, 2016). The authors further term social media as the means for revolutionizing communication and the most modern method of digital transmission in the globe which could not be ignored. In concurrence, Jijina and Raju (2016) report that social media has brought about a paradigm shift in individual communication while at the same time rapidly taking charge of interactions in the professional world

Rupak et al., (2014) observe that individual users are spending a significant amount of their online time in social media platforms further saying the novel internet-enabled “voice of mass” was causing a paradigm shift in communication thus impacting on every single aspect of the society. The potential impact of social media is demonstrated in the effective use of Facebook and

YouTube in the Tunisian and Egyptian political uprising to facilitate real time spreading of information thus contributing greatly to fast overthrow of presidents Zine El Ebidine Ben Ali and Hosni Mubarak respectively. A survey by the Bloggers Association of Kenya (BAKE) indicates that since their uptake, social media applications like blogs, Twitter and Facebook have been offering diverse content online (BAKE, 2015). Social media has opened avenues through which Kenyans can now express themselves by writing on their areas of interest while at the same time exercising their freedom of expression as enshrined in the Kenya Constitution 2010. Going by the BAKE report of 2015, 4.3 million and 4.2 million Kenyans were on a monthly basis using Facebook and Twitter respectively (BAKE, 2015). Importance of social media in Kenya is exemplified by the tweeting chief of Lanet Umoja village who signed up users to Twitter's service agreement with Safaricom and Airtel to enhance service delivery to his area citizens (Kaigwa Mark, Odanga M. & Costello, 2014).

In Africa, where access to agricultural outputs generated in public research organizations is a challenge, social media has the potential to enhance the search for, distribution and sharing of new technologies (Chisenga et al., 2014). It is emerging that all great things in agriculture such as new innovations, conferences, workshops, trainings, reports and publications are being tweeted or hashtagged on a daily basis (Suchiradipta & Saravanan, 2016). Furthermore, a number of organizations have devised agricultural applications through which farmers can access information on new practices online in addition to enabling direct interactions with agricultural experts and advisory services (Jijina & Raju, 2016). In Kenya for instance, a number of social media innovations including platforms like Mkulima Young, Young Farmers Market, Digital Farmers Kenya and Mkulima Hub Kenya have been developed with the aim of enhancing agricultural productivity (Kipkurgat et al., 2016). The platforms are aimed at educating and informing farmers

on agricultural related matters through sharing of information links and news articles as well as making inquiries and obtaining feedback (Kipkurgat et al., 2016). In addition to the platforms mentioned above, most agricultural institutions in Kenya have incorporated social media as part of their information systems. The Kenya Agricultural and Livestock Research Organization and the Agricultural Information Resource Center for example use, Twitter, YouTube, and Facebook platforms as well as blogs to share information (Kipkurgat et al., 2016).

Despite the array of advantages offered by social media platforms, low usage by rural communities of most developing countries continue to be documented with infrastructure and attitude identified among the major barriers (Suchiradipta & Saravanan, 2016). The authors further report that due to lack of skills and experience in social media among the rural masses, skepticism was still an important obstacle to national and international organizations in their attempt to tap onto the technologies.

This study therefore was an assessment of use of social media among the smallholder farmers with the overall goal being to establish whether the farming community was benefiting from the versatile technologies given the efforts being made to facilitate efficient access to agricultural information by various stakeholders.

1.2 Statement of the problem

While success in agriculture and rural development is propelled by informed actions of rural masses, generation of new agricultural technologies, knowledge and information remains valueless unless the same is packaged and shared with the farmers as the intended end-users (KALRO, 2017). Agricultural extension in Kenya is currently faced with myriad of challenges ranging from low staffing level, aging staff and budgetary constraints which are negatively affecting the

effectiveness of service delivery (MoALF, 2012). Various public-private agricultural extension programs developed in an attempt to address information asymmetries have generally been found to be with limitations, unsustainable and have created little impact (Aker, 2011).

Social media provides huge opportunities and incentives that have potential to enable millions of farmers to access same information without being deterred by geographical disparity (Cornelisse *et al.*, 2011). In Africa, where access to agricultural outputs generated in public research organizations is a challenge, social media has the potential to enhance the search for, distribution and sharing of the new technologies (Chisenga *et al.*, 2014). In Kenya, a number of social media platforms have been developed with the aim of educating and informing farmers on agricultural related matters through sharing of information links and news articles as well as making enquiries and obtaining feedback (Kipkurgat *et al.*, 2016). In addition, most agricultural institutions have incorporated social media as part of their information systems. For instance, the Kenya Agricultural and Livestock Research Organization and the Agricultural Information Resource Center for example use, twitter, YouTube and Facebook platforms as well as blogs to facilitate access to research information (Kipkurgat *et al.*, 2016). Despite the aforementioned efforts, lack of social media awareness and low usage in the rural areas of developing countries have been documented (Rhoades & Aue, 2010). Suchiradipta and Saravanan (2016), further identify infrastructural difficulties, psychological barriers, skill, competence and skepticism as important obstacles in social media use in the rural setup of developing countries. The study therefore purposed to assess use of social media among smallholder farmers in Thika Sub-county of Kiambu further gauging their perception on the overall usefulness and ease of use of the platforms in agricultural activities for increased agricultural productivity.

1.3 Objectives

1.3.1 General objective

To assess use of social media among smallholder farmers in Thika Sub-county of Kiambu for efficient access to agricultural information leading to improved productivity.

1.3.2 Specific objectives

1. To assess the level of social media familiarity and usage among farmers.
2. To analyse the social media platforms being used by farmers and purpose for use.
3. To assess the influence of farmers' demographic characteristics on awareness and usage of social media.
4. To assess how farmers' perception on the usefulness and ease of use of social media in agricultural activities influence their behavioural intention to use.

1.3.3 Research Questions/Hypotheses

1. What is the level of social media familiarity and usage among farmers?
2. Which social media platforms are farmers using and for what purpose?

H1: Each of the following- age, gender and education has a positive influence on social media familiarity and usage among farmers

H2: Farmers' perception on usefulness and ease of use of social media has a positive influence on their behavioural intention to use the technologies in agricultural activities.

1.4 Justification

Getting a novel idea accepted, even when the advantages it provides are obvious is often very challenging (Rogers, 1983). It is no wonder that most individuals and organizations continue to grapple with the challenge on how to accelerate the rate of diffusion of technologies which explains

why dissemination of innovations evokes a lot of interest (Rogers, 1983). Social media augmented by the upsurge in the number of smartphones continues to gain popularity the world over becoming the typical means of communication (Sophie, 2013). Kenya is among Sub-Saharan African countries experiencing the highest growth rate of smart phone and internet penetration (BAKE, 2015). The Communications Authority of Kenya (2016) reports a mobile phone penetration of about 88.1 per cent with 37.8 million subscribers, 31.9 million Internet users and 21.6 million Internet/data market subscriptions.

A review on available literature reveals a number of challenges found to influence social media adoption and usage. Suchiradipta and Saravanan (2016), for instance identify infrastructural difficulties, psychological barriers, skills, competence and skepticism as important obstacles in social media use in the rural setup of developing countries. Andres and Woodard (2013), on the other hand report intermittent availability of electricity, relatively high cost of connecting, insufficient bandwidth, outdated equipment, and low internet speed as the major barriers in rural Kenya. Most importantly, Andres and Woodard (2013), report that most social media efforts in agriculture have not focused on smallholder farmers but tend to concentrate on larger scale ones. Considering that agriculture is a major livelihood for a critical mass of rural Kenyans, it was imperative to establish the place of social media among the smallholder farming communities in relation to access of agricultural information. The information generated through this research will be useful in guiding individual researchers, extension agents, farmers, research organizations, policy makers and all other key stakeholders responsible for dissemination of agricultural technologies and information on how best to harness social media usage by farmers for improved productivity.

1.5 Scope/Limitation

The research was conducted in Thika Sub-County of Kiambu County, Central region of Kenya targeting farmers who were organized into extension groups. The researcher's affiliation to an agricultural research Institute in the locality evoked some interest of trying to establish whether social media could come in handy in enhancing real time dissemination of research findings obtained at the facility to farmers and extension services providers in the environment. In addition, the study was self-sponsored hence had financial limitations. The study identifies three important limitations. First, it was not possible to analyze every single social media application given the technological dynamism, hence the study considered the Web 2.0 as a single platform comprising diverse technologies, that enable users to offer, modify and obtain contents. Secondly, generalization of the findings was found to be difficult thus the study only offers a contextualized understanding of various individual aspects associated with the population under investigation. The third limitation was that the study focused on only the farmers belonging to the active organized extension groups in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Rogers (2003), refers to an innovation as an idea, practice, or object perceived as novel by an individual or other unit of adoption. He further argues that someone may have been aware that a certain technology existed but was yet to make a favorable or unfavorable decision towards adopting or rejecting. In his book on diffusion of technologies, Rogers describes the technology adoption process as where a user first gets to know of the existence of a certain innovation, forms an attitude towards the same upon which he or she makes a decision to adopt or reject resulting to implementation (Rogers, 2003). The author further holds that it is not possible for one to begin the adoption process without prior knowledge about the innovation otherwise referred to as awareness. According to Rogers, even when an innovation may have been in existence for a long time, as long as individuals perceive it as novel, then it may still be considered as innovation for them (Rogers, 2003).

Since the late 1990s, several different types of social media sites have been launched (Rupak et al., 2014). Through social media, users are able to interact, create, share, retrieve and exchange textual, pictorial and video information (Suchiradipta & Saravanan, 2016). In the agricultural sector, social media platforms are gaining acceptance with professionals using them to establish networks while farmers talk to peers and consumers (Jijina & Raju, 2016). The significance of social media in the agricultural sector is in their ability to unite farmers, industry and consumers thus enabling realization of engagement, confidence, transparency and acceptability along the value chain (Sophie, 2013). Social media facilitates networking among peer farmers, and between farmer and

industry, crisis communication as well as consumer engagement which are essential values of communication in the agricultural sector (Sophie, 2013). The Kenya National Information and Communications Technology Policy seeks to ensure that ICTs play a critical role as an empowerment tool for facilitating realization of the poverty alleviation objectives (RoK, 2006). On the other hand, the National Agricultural Sector Extension Policy proposes use of ICTs and mass media in order to realize a wider farmer coverage and improved sharing of information (MoAL&F, 2012). Kenya has so far made great strides in ICTS and is among Sub-Saharan African countries experiencing the highest growth rate of smart phone and internet penetration (BAKE, 2015). Boasting a mobile phone penetration of about 88.1 per cent with over 37.8 million subscribers (CAK, 2016) it is justifiable to conclude that the country has made significant achievement in terms of last mile connectivity envisaged in the ICT policy. Considering the level of mobile telephony connectivity in the Country and the importance of access to agricultural innovations by the rural masses, it becomes imperative to engage in fruitful conversations on how best the emerging ICT technologies such social media could be harnessed to facilitate efficient dissemination of information among farmers and other stakeholders.

2.2 Categorization and brief description of social media platforms

Numerous social media applications exist and more are consistently developing (Wirtz & Göttel, 2016). As a result, Kaplan and Haenlein (2010), acknowledge the lack of a systematic method in which different social media applications could be classified. Efforts to classify social media have resulted in several authors, among them Constantinides and Fountain (2008), Mayfield (2008), and Cavazza (2015) proposing categorizations which in some cases differ in the number of classifications, names and types of social media tools under each category. This study adopts the categorization of social media as classified by Kaplan and Haenlein (2010) as outlined below.

2.2.1 Social networking sites

Mainly used for generating individual profiles and networking with friends, colleagues, and peers. These sites are regarded as the most common form of social media platform with highest coverage attributed to the fact that they are for personal use. Examples are Facebook, Orkut, Friendstar, MySpace, Google+.

2.2.2 Blogs and vlogs

This category which includes Blogger and Wordpress happens to be the initial form of social media entailing to a large extent personal web pages though increasingly being to reach out to clients by the corporate world.

2.2.3 Micro-blogs

Similar to blogs in terms of media richness though with restriction of characters, these include Twitter and Instagram and are commonly used for creating and sharing content.

2.2.4 Collaborative projects

Though with a generally low media richness, this category enables joint and simultaneous content creation by users. Due to their diversity and broad base coverage, collaborative projects come in handy as the main source of information for users. A good example is Wikis.

2.2.4 Socially integrated messaging platforms

These platforms which include WhatsApp, Facebook, Messenger and Snapchat have in the recent past gained high usage levels from their ability to enable group messaging preferences and high media richness. Users are able to create and share diverse content at an individual level or group setup.

2.2.5 Virtual social worlds

This category of social media platforms enable user creativity and collaboration resulting in virtual world that allows the users to define their universe, procedures and objectives further enabling

creation of digital objects and scenes that surround them. The simulated environment gives users a limitless space for self-presentation strategies thus making it easy to create content online. It also enables corporate houses to engage in virtual advertisement, v-commerce and promotion research.

2.2.6 Professional networking

These sites are designed particularly for professional networking thus increasing the scope for scientific consultations among peers and experts in specific arenas. This facilitates expansion of research scopes for dissemination amongst wider audience. Examples include, ResearchGate, Academia.edu and LinkedIn.

2.2.7 Social gaming

Comparable to virtual social worlds in relation to high social aspect and media richness though somehow limited in the scope of self-presentation and self-disclosure, these platforms enable users to interact with each other. Social gaming offers some of the most widely played games worldwide and entail a number of products played by tens of millions of people. Corporate houses can also take advantage of the platforms for communication campaigns to enable reaching out to millions of users. The most current examples of these networks include Kantai Collection, Mafia Wars FarmVille, FrontierVille, Gardens of Time and the Sims Social.

2.2.8 Content communities

These platforms are typically formed to facilitate easy sharing of particular type of content amongst a number of users. The platforms have high media richness for specific content providing easier means to reach a global user base in a remarkable way. They include YouTube, Instagram, Audio and Microsoft Office applications.

2.2.9 Forums, discussion boards and groups

This category facilitates easier creation and sharing of content amongst users with specific interests or activities. All platforms cannot support several formats of content thus making media richness to be medium. Examples include, Google hangout, Blackboard and Discussion groups.

In the view of the cited literature, the study carried out an assessment of the level of social media awareness and usage among smallholder farmers, demographic characteristics influence on usage, preferred platforms and perception on usefulness and ease of use in agricultural activities.

2.3 Social media familiarity and usage among farmers.

According to Rogers (2003), the knowledge stage of technology adoption commences when an individual gets to know of the existence of an innovation further gaining some level of understanding of how it functions. However, Rogers considers knowledge about existence of an innovation as quite different from actual usage further holding that most individuals are aware of the presence of many innovations which they have not necessarily adopted. A study in Kenya by Ndung'u and Waema (2011) to assess households' perception on developmental outcomes arising from internet documented a low internet usage which was mainly limited to urban areas even when mobile phones were well spread across the country. In concurrence, a study in India (Babu et al, 2012) discovered underutilization of internet and mobile phones for accessing information among the farmers in the target districts. Low internet usage therefore means that farmers are yet to leapfrog from the existing and emerging ICT applications which have potential to revolutionize access to agricultural information. Social media according to Suchiradipta and Saravanan (2016) is relatively a new medium of communication and its practical use in agriculture particularly in the rural setups of developing countries is still at emerging stages. The authors further identify farmers' readiness, lack of requisite knowledge and skills as major obstacles that need to be overcome to

facilitate proper understanding and usage of social media as an integral part of development communication. This study was therefore keen on establishing the level of social media awareness and usage in agricultural activities among the farmers in the study area.

2.4 An analysis of social media platforms being used by farmers and purpose for use

Generally, social media has attracted users in hundreds of millions world over who clearly appreciate the ensuing benefits leading to the intense and hyper usage shaped by users' positive attitude towards the technologies (Walther, 1996). The significance of social media at individual and society level in the recent past has triggered intense discussions on the subject matter in the academia world attracting a lot of research interests in many scientific disciplines (Khang et al., 2012). However, according to Rupak *et al.*, (2014), some social media sites continue to exist and witness an impressive proportion of growth in terms of number of users and the quantity or volume of information exchanged while others have faltered and closed. Failure of many of these sites can be attributed to their inability to garner acceptance and popularity among the target users (Rupak et al., 2014). Suchiradipta and Saravanan (2016) in their study on social media and delivery of agricultural extension services established that Facebook was the most popular platform followed by Twitter, Blogs, LinkedIn and Google+ descending order. In Kenya for example, Facebook platforms like Mkulima Young have been connecting young Kenyan farmers with their consumers locally and internationally further giving them the opportunity to share experiences with their counterparts across the globe (Suchiradipta & Saravanan, 2016). This objective sought to establish the social media platforms that farmers in the study area were using further understanding what they used then for.

2.5 Influence of demographic characteristics on social media familiarity and usage

While a number of factors could be attributed to technology adoption, numerous studies investigating acceptance and use of social media platforms have given importance to the influence of demographic variables such as age, gender, education and experience on user decisions (Lubua & Pretorius, 2018).

Fundamentally, users belonging to different age brackets are obviously likely to have varied perceptions on social media based on their needs and exposure. Evidently, older adopters of an innovation are usually slower at learning particularly if a technology is relatively new (Bolarinwa, 2015). This is attributed to the decline in cognitive and retention capabilities associated with age which makes older users experience difficulties in learning a new technology compared to younger ones (Chhachhar & Hassan, 2013). A study by Suchiradipta and Saravanan (2016) on the role social media plays in shaping the future of agricultural extension observes that while there was a growing number of young people using the platforms the older generation's online presence is still low. In India for example, older men in the rural areas formed a lower percent of social media users (Bhargava, 2015). This therefore makes it important to evaluate the impact of age on awareness and usage of social media among the farmers.

Gender on the other hand is an important variable in adoption of innovations. In the African context, gender is broadly categorized into male and female. Since to some extent gender difference brings about differences in societal responsibilities, this demographic factor is useful in defining how an individual values a new technology (Yonazi *et al.*, 2012). In their study on social commerce in developing countries, Talat *et al.*, (2013) observed that men were less reliant on facilitating conditions when learning new technologies compared to women. This simply means that men are likely to work harder in the efforts to overcome obstacles hindering technology use.

Education of the respondent is another key demographic variable in acceptance and use of technologies (Tang & Wu, 2015). The authors further hold that more knowledge makes it easier for a user to understand the expected benefits arising from using a new technology. Baker *et al.*, (2007) had earlier identified a user's education level as an important factor in influencing ones behaviour and attitude towards adoption of technology.

The above described user demographic characteristics have commonly been used and are thus highly regarded in the efforts to understand patterns in adoption of innovations as well user behaviour (Hernández *et al.*, 2011).

2.6 Farmers' perception on usefulness and ease of use of social media

In his book on diffusion of Innovations, Rogers (2003) reasons that attitudes toward a new idea most frequently influence user's decision to adopt or not. The perceived relevance and usefulness of an innovation to an individual's situation therefore plays an important role in influencing usage. Evolution of usefulness and ease of use of technologies has continued from the original research model of technology acceptance by Davis (1989). As defined by Venkatesh and Bala (2008), perceived usefulness is the degree to which an individual believes that his or her job performance would be enhanced by making use of a new technology while ease of use is the extent of believe by an individual that operating the new system required no effort. A wide range of research on the two variables has been carried out overtime founded on the theory of reasoned action whereby an individual's decision to adopt or reject a new information technology is heavily influenced by their perception on its usefulness as well as its ease of use (Malhotra *et al*, 2001; Saade, 2007; Venkatesh & Bala, 2008). Vankatesh (2000), opines that a higher ease of use score on a technology positively correlates with a higher usefulness rating. Other studies, (Devaraj & Kohli, 2002; Venkatesh, 2000) have so far supported this argument.

Ease of use signifies the degree to which an innovation is perceived not to be difficult to understand, learn, or operate (Rogers, 1962; Zeithmal *et al.*, 2002). Conversely, Venkatesh and Davis (2000) define perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. In regards to social media, Rupak *et al.*, (2014) argue that for the platforms to support a wide demographics of users, the design of modules, applications, and tools, needs to be user-centric. The team additionally observed that a site needed a clear and simplistic overview of services, fluent navigation, and smooth user interaction hence should be intuitive for a first time user and efficient in getting tasks done. Previous studies (Rauniar *et al.*, 2009; Molla & Licker, 2001; Yoo & Donthu, 2001; Zeithaml, 2000) indicate that an easy to use web site can enhance the user's experience.

The study considered perceived usefulness as the extent to which farmers in the study area believed that using social media platforms would help improve access to agricultural information leading to accelerated adoption of research technologies. Ease of use on the other hand was the degree to which the farmers believed they would be able to use social media with minimal effort. Park, (2009) attributes perception on usefulness and ease of use of a new technology to the direct or an indirect influence on the individual's actual usage. The two variables were therefore used to gauge farmers' overall behavioural intention to use social media in agricultural activities.

2.7 Theoretical Framework

This research employed Technology Acceptance Model (TAM) as the basis for assessing how farmer perception on usefulness and ease of use of social media influenced their behavioural intention to use the technologies in agricultural related activities. Psychological theories have been instrumental in the prediction of human behavior. The Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1985), the Social Cognitive Theory (SCT) (Hill *et al.*, 1987:

Compeau & Higgins, 1995) and Technology Acceptance Model (Davis, 1989, 1993) are some of the most commonly used theories in behavioural studies. However, while a number of theories have been recommended to explain the acceptance of innovations (Rogers, 1995), the technology acceptance model effectively explains the adoption of diverse information technology instruments (McCoy, 2005).

2.7.1 Technology Acceptance Model (TAM)

Technology Acceptance Model was according to Davis, (1989) and Bagozzi, *et al.*, (1992), developed in 1989 by Fred Davis and Richard Bagozzi. The TAM is considered as a powerful extension of the theory of reasoned action and one of the most famous models in regards to technology acceptance (Thomas & James, 2017). Rogers (1995) had earlier observed that TAM enables effective explanation of adoption of various information technology instruments compared to several other proposed theories for similar studies. Correspondingly, Venkatesh and Davis (2000), recognize TAM as one among the most powerful models used in scholarly studies on acceptance and usage of information systems stream of research. Holding a similar position with aforementioned authors, Legris, *et al.*, (2003) opine that TAM is undoubtedly a theoretical model of choice for explaining and predicting user behavior of information technology.

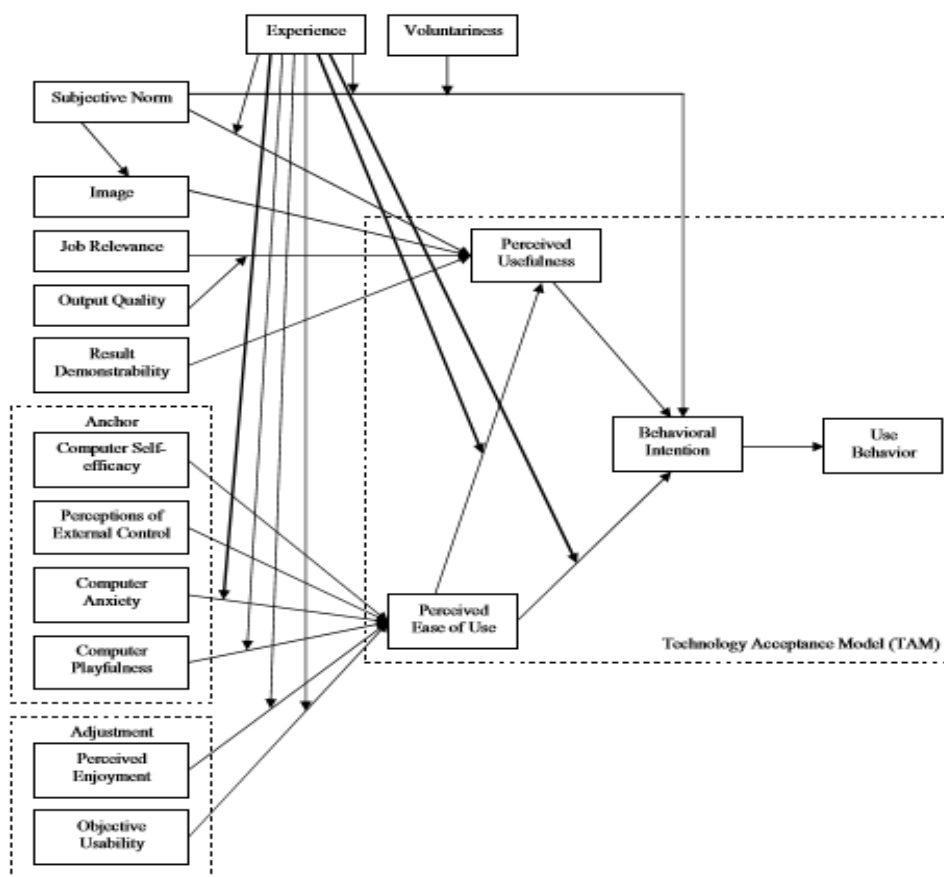
Technology adoption model has overtime been revised resulting in a simplified model whose theoretical framework has become common in researches relating to behavioral beliefs and intentions (Davis, 1986; Klobas, 1995; Venkatesh & Davis, 2000; Thong *et al.*, 2002; Venkatesh *et al.*, 2002; Lee, Kwon & Schumann, (2005). TAM was extended to TAM2 in the effort to address the limitations of the latter whereby some additional key elements were incorporated (Venkatesh & Davis, 2000). However, TAM2 had shortcomings as well since it only gave importance to the factors determining perception on usefulness and intention to use constructs necessitating revision

to TAM3 by Venkatesh and Bala (2008). The revised TAM3 introduced the determinants of perception on ease of use and intention to use concepts for robustness. TAM3 therefore presents a complete nomological network of the key factors that determine adoption of Information Technology Systems (Venkatesh & Bala, 2008).

2.7.2 Conceptual Framework (TAM)

Independent variables

Dependent variable



^aThick lines indicate new relationships proposed in TAM3.

Figure 2.1: Technology Acceptance Model (TAM3) conceptual framework

The TAM3 postulates perceived usefulness and perceived ease of use as the two main cognitive beliefs which determine an individuals' attitude towards use of a new technology, in turn influencing one's behavioural adoption intention. As a result, TAM is used to hypothesize

individuals' behavioral intention to use a new IT thus assessing their perception on a technology's usefulness as well as ease of use (Venkatesh & Bala, 2008). The study was founded on TAM3 as formulated by Venkatesh and Bala (2008) where key social media drivers, usefulness and ease of use were investigated. According to TAM, acceptance of a specific technological application which may include intention to or actual use is determined by an individual's perception on the usefulness and ease of use of the said application (Davis 1989; Venkatesh & Davis, 1996).

The investigation treated PU, PEOU, and IU constructs as both dependent and independent variables. According to TAM, PEOU and PU are generally assumed to be significant determinants of acceptance of information systems, thus it is important to start by establishing what in the first place may influence these variables (Bernd & Vincent, 2016). The language was been tailor-made to reflect the measurement of these variables use of social media in this study to enable a distinction from the reviewed studies. Conceptual frameworks for perceived usefulness, perceived ease of use and intention to use are illustrated on Figures, 2.2, 2.3 and 2.4 respectively below.

2.7.3 Perceived Usefulness (PU)

Four constructs; time saving, wider coverage, ease of service delivery and cost reduction were used as the key factors likely to influence farmer perception on usefulness of social media (Figure 2.2). Different researches where PU has been treated as a dependent variable have used diverse constructs such as online features (Lin, 2007), consumer susceptibility (Park & Lee, 2009), demographic variables (Lennon *et al.*, 2012) and internet shopping experience as determinants of user perception. Other studies have tested perception on usefulness of social media using factors like synchronicity (Shin & Kim, 2008), confirmation (Shiau & Chau, 2012) and affective quality (Benlian *et al.*, 2012). The farmers' perception on social media usefulness measured through the

four constructs had a bearing on their behavioural intention to use the applications in agricultural activities.

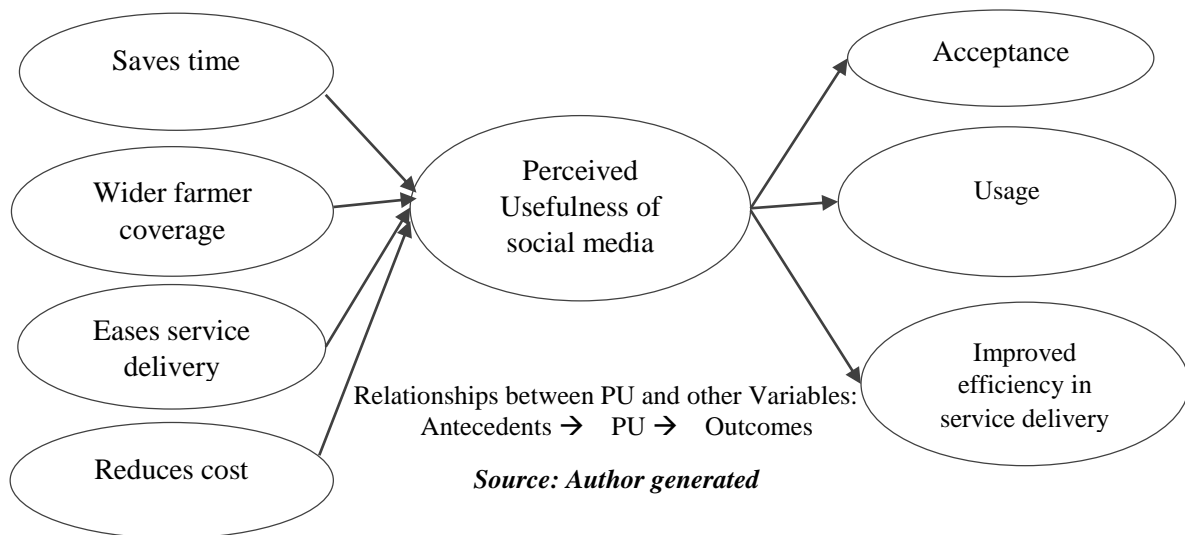


Figure 2.2: Conceptual framework for Perceived Usefulness

2.7.4 Perceived Ease of Use (PEOU)

Perception on ease of use was assessed through four constructs, cumbersomeness, skills and effort, easy to learn as well as enjoyment (Figure 2.3) which had more to do with platform features necessary to enable a user operate social media. Positive perception among the respondents was expected to positively impact on overall acceptance and usage.

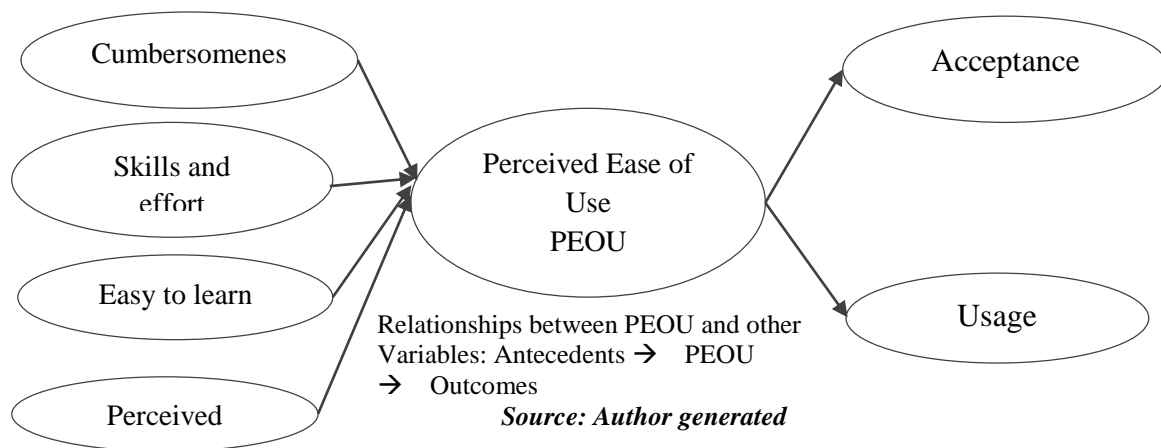
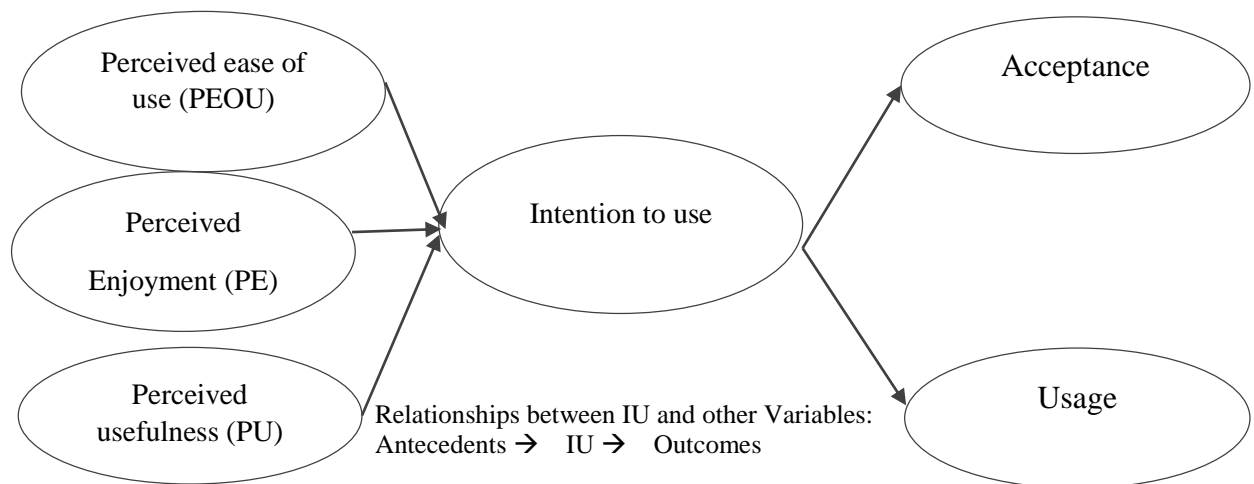


Figure 2.3: Conceptual framework for Perceived Ease of Use

2.7.5 Intention to Use (IU)

Further analysis was carried out where usefulness (PU), ease of use (PEOU) and perceived enjoyment (PE) (Figure 2.4) were treated as independent variables with the aim assessing their influence the farmers' behavioural intention to use social media for agricultural purposes. Perceived ease of use and perceived usefulness have been considered quite influential in motivating users to adopt an information system while enjoyment is defined as the central reward resulting from the use of a technology (Lai, 2016).



Source: Author generated

Figure 2.4: Conceptual framework for behavioural intention to use

The reviewed literature was useful in enabling the researcher to understand how other scholars have assessed acceptance of social media by users, test whether the propositions of TAM and its improvements can persist if their causal assumptions remained constant, or whether it would be necessary to adapt them in the context of social media. The fundamental assumption of this study was that perceived usefulness, perceived ease of use and perceived enjoyment would directly influence respondents' social media usage in agricultural related activities.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter has been organized into five sections namely, description of the research site; research design; sampling technique and sample size; data collection methodology; and finally data analysis and presentation.

3.2 Description of the research site

The study was conducted in Thika Sub-County, an administrative unit of Kiambu County in the central Kenya region (Figure 3.1). Thika Sub-County comprises of five agricultural wards namely Ngoliba, Hospital, Kamenu, Township and Gatuanyaga. The wards are further categorized into urban, peri-urban or rural setups. To ease agricultural extension service delivery, farmers in the wards have been organized into small extension groups some of which are more active than others. Some of the groups were by the time of the study formally registered under the department of the Sub-County Social Development office while others were in the process of registration. The groups are heterogeneous in terms of composition and membership size.



Source: Kiambu Agriculture, Livestock & Fisheries 2013-2017 Strategic Plan

Figure 3.1 Administrative units of Kiambu County

3.3 Research Design

To enable the researcher understand, describe and discover findings, a qualitative research design was used for the study. The research design was aimed at generating descriptive as well as correlational data. Descriptive aspect of the research was intended to enable the researcher define the prevailing status of the study population in as far as acceptance and usage of social media was concerned. Correlational features of the research on the other hand were used to establish possible statistical associations between given variables. A formal survey entailing face to face administration of semi-structured questionnaires was conducted where qualitative data was generated. This approach is given importance by Rubin and Rubin (2005) who hold that social scientists prefer to use qualitative research approach to be able to generate a comprehensive description of human behaviour and beliefs within the contexts of their occurrence.

The survey questionnaire comprised a mix of descriptive and inferential statistical enquiries. This was greatly influenced by (Kothari, 2004; Mugenda & Mugenda, 1999 and Wiersma 1995) who

view the two statistical methods as effective in the documentation and inferential analysis of prevailing situations relating to a study population at any given time. In particular, Wiersma (1995), defines descriptive survey as a method that entails studying of a situation as it is in the field further attempting to explain why the situation is the way it is. Moreover, Mugenda and Mugenda, (1999), advise that since most research deals with samples, it is imperative to infer the obtained results to the entire population for generalizability. Inferential statistics were therefore useful in helping the researcher assess whether the results obtained from the sample had any similarities with the results projected from the whole population.

3.4: Sampling Technique and Sample Size

Thika Sub-County was purposively selected for two reasons, first due to the diversity of the farming community which is categorized into urban, peri-urban and rural farmers and secondly the proximity to the researcher considering this was a self-sponsored study where finances were a constraint. As supported by (Kothari 2004; Mugenda & Mugenda 1999; Singleton *et al.*, 1998; Patton, 1990), purposive sampling option allowed the researcher to rely on her expert decision to choose specific representative units thus enabling selection of rich information that provided understanding of fundamental issues central to the study population.

Through the guidance of the Agricultural Ward Extension Officers and based on level participation in agricultural activities at the study period, two groups from each of the five wards were again purposely selected. The ten groups of heterogeneous membership selected from the five wards had a total of 218 members. To determine the sample size, the survey adopted 95 percent certainty level for estimating the true population value, 50 percent as the expected proportion of the population with the attributes of interest and 5 percent confidence interval, resulting in 139 farmers. Owing to the variations in the number of members in each extension group, Probability Proportional to Size

(PPS) sampling technique was used where a sample of 140 farmers was drawn from the 218 farmers (Table 3.1).

Table 3.1 Probability proportional to size sampling for farmer respondents

Ward	Group Name	Total population	% Population	Sample size per ward
Ngoliba	Duke Farmers Group	50	23	32
	Ngoliba United Farmers self-help group	25	11	15
Hospital	Happy Valley Farmers Group	15	7	10
	Nanasi Farmers Group	15	7	10
	Valley Land Self-help group	20	9	13
Kamenu	Vision self-help Group	20	9	13
Township	Athena Horticultural Self Help Group	18	8	11
	Karibaribi Farmers Group	15	7	10
Gatuanyaga	Athi Gravity Farmers Group	20	9	13
	Munyu Kio Farmers Group	20	9	13
Total		218	100	140

The research team under the leadership of the extension service providers in every ward visited the farmers during their scheduled group meetings thus enabling interactive sessions. After the meeting preliminaries, the research team using the list of farmers present selected the respondents through simple random sampling with the aid of a table of random numbers.

3.5: Data Collection

Data was collected through researcher aided semi-structured questionnaires on the identified 140 farmer respondents. Questionnaires have been termed as the most popular data collection methods in research surveys (Mugenda & Mugenda, 2003; Kothari, 2004). Furthermore, Dörnyei (2007), notes that interviews and questionnaires are the most commonly used methods of collecting qualitative data by researchers. Similarly, Cohen *et al.*, (2007) regard an interview “a valuable

method for exploring the construction and negotiation of meanings in a natural setting”. The research team administered the data collection tool on each of the selected respondents thus giving room for interpretation of the questions where necessary and enabling interactive participation from the direct personal contact. This study principally relied on primary data which is described by Kothari (2004), as fresh data collected for the first time thus maintaining originality in character. According to Chisenga *et al.*, (2014), there are only a few research studies exploring the usage of social media in research in Africa hence the scarcity of literature for review.

The data collection tool was subjected to a pre-test one week before the commencement of actual data collection where the results were used to revise and fine tune the tool. The semi-questionnaires contained open and closed ended questions and was organized into six sections as follows;

3.5.1 Background information

This section was used to collect preliminary details of the interview including date, place, as well as the interviewer and interviewee names.

3.5.2 Demographic information

The demographic section was used to capture the characteristics of the population under investigation including gender, age, education, profession, marital status, land size and the key enterprises undertaken by the respondents.

3.5.3 Access to agricultural information

This section enabled the researcher to understand how the farmers were accessing agricultural information, the challenges they encountered in the process and role of the extension services agents in dissemination.

3.5.4 Familiarity and usage of social media

This part was designed to collect data on the farmers' social media awareness level, actual usage, frequency of use as well as preferred platforms. Lack of awareness has been documented as one of the reasons for low social media usage by in agricultural activities both at personal and organizational front (Rhoades & Aue, 2010).

3.5.5 Assessing farmers' perception on usefulness of social media

This section was used to generate data that evaluated respondents' perception on usefulness of social media in enhancing efficiency in service delivery. A five-point Likert scale where the answer options were, strongly disagree, slightly disagree, uncertain, slightly agree, and strongly agree was used. Various authors recognize the role of the Likert scale in qualitative research. Subedi (2016), for instance reports that the scale is powerful in the measurement of attitudinal parameters necessary to investigate human behavior. Likewise, Dittrich *et al.*, (2007) consider the scale as an important tool for use in surveys related to psychology and social matters further saying that it comes in handy in the collection of attitudinal data.

3.5.6 Assessing farmers' perception on ease of use of social media

The study regarded PEOU as being the degree to which a farmer or extension agent believes that it would require no effort to uses social media. Using a five-point Likert measure, the respondents' perceptions on social media cumbersomeness, ease of learning, perceived enjoyment as well as the effort and skills required while applying the technologies in agricultural communication were established.

3.6: Data Analysis and Presentation

The collected raw data was systematically organized and transformed into numerical codes that represented the characteristics of the variables under investigation. This is in line with

recommendation by Mugenda & Mugenda (1999) that raw data obtained from the field afresh is usually difficult to interpret thus required cleaning, coding and keying into a computer for analysis. The coded data was input into Microsoft Excel application and cleaned out of any inconsistencies. The data were analyzed with the Statistical Program for Social Sciences (SPSS) version 20.0. Descriptive measurements including tables, percentages, graphs and charts have been generated to meaningfully describe the distribution of the scores. To establish relationships between variables, tests of associations and correlation coefficient multiple regression analysis were employed. According to Mugenda and Mugenda, (1999), inferential statistics help to determine how likely it is for the results obtained from a sample to be similar to results expected from the entire population.

The equations for the regression models for were as follows;

1. To assess farmers’ perception on usefulness of social media in agricultural activities

$$Y (PU) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon$$

Where Y- is the Perceived usefulness (PU) and is the dependent variable

X_{1-n} – are the independent variables and predictors of Y which entailed, time saving, wider coverage, ease of service delivery and cost reduction

β_0 – is the constant

β_{1-n} - are the regression coefficients or change induced in PU by each X

ε – is the error

2. To assess farmers’ perception on ease of use of social media in agricultural activities

$$Y (PEOU) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon$$

Where Y is the dependent variable, in this case Perceived Ease of Use (PEOU)

X_{1-n} – comprised, cumbersomeness, skills and effort, easy to learn as well as enjoyment as predictors of Y.

β_0 – is the constant

β_{1-n} – represented the change induced in PEU by each X

ε – being the error

3.To assess influence of perceived usefulness, perceived ease of use and perceived enjoyment on the farmers' intention to use social media in agricultural activities

$$Y \text{ (IU)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon$$

Where Y- Intention to use (IU) being the dependent variable

X_{1-n} – Predicted Y and entailed perceived ease of use, perceived enjoyment and perceived usefulness

β_0 – is the constant

β_{1-n} - are the regression coefficients of Y by each X

ε – is the error

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings by each objective. A total 140 farmer respondents were interviewed.

4.1.1 Socio-demographic characteristics of respondents

The socio-demographic farmer characteristics are depicted in Table 2. The study population was majorly smallholder farmers where the majority, 58 percent possessed less than one acre of land, 38 percent owning between 1 to 5 acres with only 5 percent having more than 5 acres. Female farmers formed the majority of the respondents in the study area at 60 percent. This corresponds with a report that the participation of women in agriculture compared to men is higher in sub-Saharan Africa with over 50 percent reported in East Africa (SOFA & Doss, 2011). The position is further supported by FAO, (2011) who confirm that the percentage share of women in agricultural activities in most rural setup of developing countries was higher than that of men.

The farming community majorly comprised of middle-aged and elderly farmers where 69 and 11 percent were found to be in the 36-64 and over 65 years age brackets respectively, while only 20 percent fell under the youth category of 18-35 years. This is an indication that agriculture is yet to be attractive to the youth, a position held by Afande, Maina and Mathenge (2015) who view the poor state of youth involvement in agricultural activities in Kenya as a matter of great concern among various stakeholders including researchers and policymakers. The findings corroborate with by Oto and Shimayohol (2011) who in their study on the extension communication channels' usage and preference by farmers in Benue State, Nigeria reported minimal participation of youth in agriculture.

In terms of education the study established that a vast majority of the farmers, 52 percent, possessed primary school level, 35 percent had secondary level with 9 percent having attained a tertiary level. However, a relatively small proportion of 4 percent did not have any formal education.

Table 4.1: Socio-demographic characteristics of respondents

Land acreage	Frequency	Percent
< 1 Acre	81	58
1- 5 acres	53	38
>5- 10 acres	5	4
> 10 acres	1	1
Total	140	100
Gender		
Male	56	40
Female	84	60
Total	140	100
Age distribution		
18-35	28	20
36-64	96	69
>65	16	11
Total	140	100
Education level		
None	5	4
Primary school	74	52
Secondary school	50	35
Tertiary	12	9
Total	140	100

As shown in Figure 4.1, the male farmers were found to be more educated than females constituting 82 percent of those who had attained tertiary level of education, 34 percent of the primary school level and 20 percent of the ones without formal learning. This therefore means that women formed the majority of respondents without formal education and also those possessing primary level. The other notable variations in education could be explained by the fact that female respondents in the study area outnumbered the male.

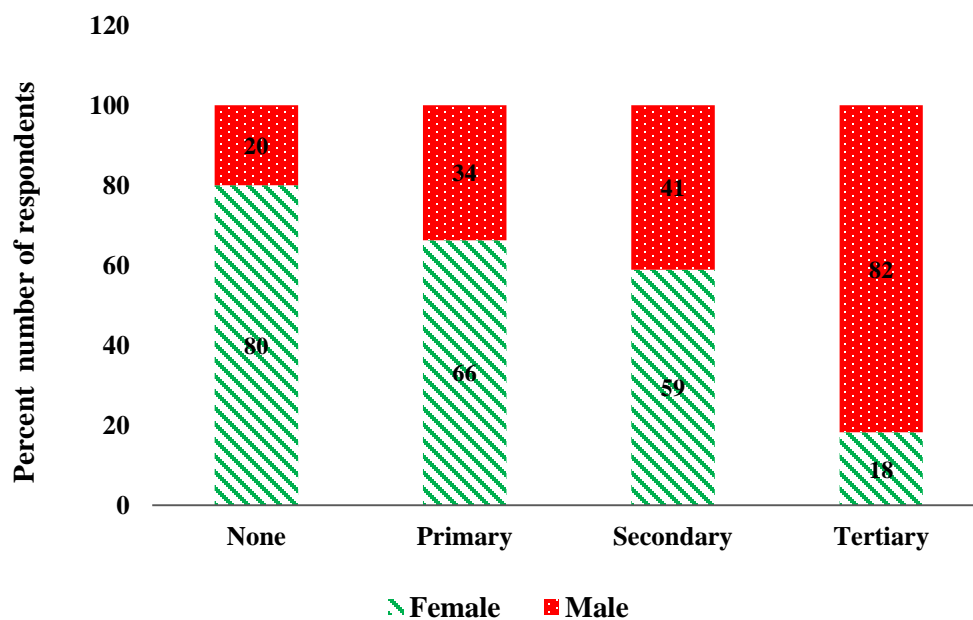


Figure 4.1: Comparing education level by gender of respondents

4.2 Assessing the level of social media familiarity and usage among farmers

This objective focused on assessing the level of social media familiarity among the farmers, actual usage and the reasons for not using the technologies from the respondents’ perspective.

4.2.1 Social media familiarity

Though, a vast majority of farmers in the study area recorded some degree of familiarity with social media only a small proportion had a high understanding. The illustration in Figure 4.2 shows that a relatively small population, 22 percent of farmers responded to being very well versed with social

media, while a vast majority, 51 percent recorded superficial understanding. A comparative 18 percent were completely ignorant of the technologies while 9 percent were not sure of their level of knowledge.

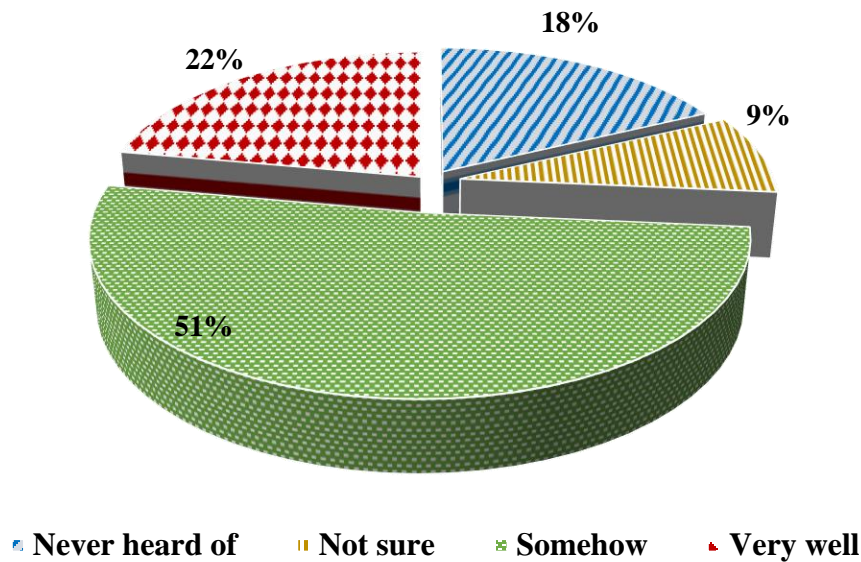


Figure 4.2: Level of familiarity with social media among farmers

A chi-square test for independence did not find any statistical differences ($p=0.07$) in social media awareness among farmers in the three Sub-County clusters of urban, peri-urban and rural areas (Table 4.2). This basically means that the population engaging in farming activities in the study area was basically more or less the same in terms of demographic characteristics hence there was no tangible distinction in social media awareness among the farmers in the urban, peri-urban and rural set ups. Though Thika Sub-County is in Kiambu County which is rated as among the most developed in the Country, the farming community did not exhibit any distinguished characteristics from most farmers in rural Kenya.

Table 4.2: Relationship between social media awareness and farmers in urban, peri-urban and rural categories

	Area Category							
	Periurban		Rural		Urban		Total	
	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Never heard of	10	20	11	12	0	0	21	15
Probably not	8	16	25	27	0	0	33	24
Somehow	21	42	35	43	5	63	61	44
Very well	11	22	11	13	3	38	25	18
Total	50	100	82	100	8	100.0	140	100
Chi²								11.569
df								6
p-value								0.07

4.2.2 Level of social media usage

The study established that only 23 percent of the farmer respondents actively used social media while a vast majority, 77 percent were not using the applications (Figure 4.3). This could be attributed to the low social media awareness level discussed in Figure 4.1 above where a mere 22 percent of the farmers responded to being very well familiar with the technologies while the rest to superficial understand, not sure or completely ignorant. The findings concur with a study by Suchiradipta and Saravanan, (2016) which identifies skill and competence as some of the major barriers to usage of social media in developing countries.

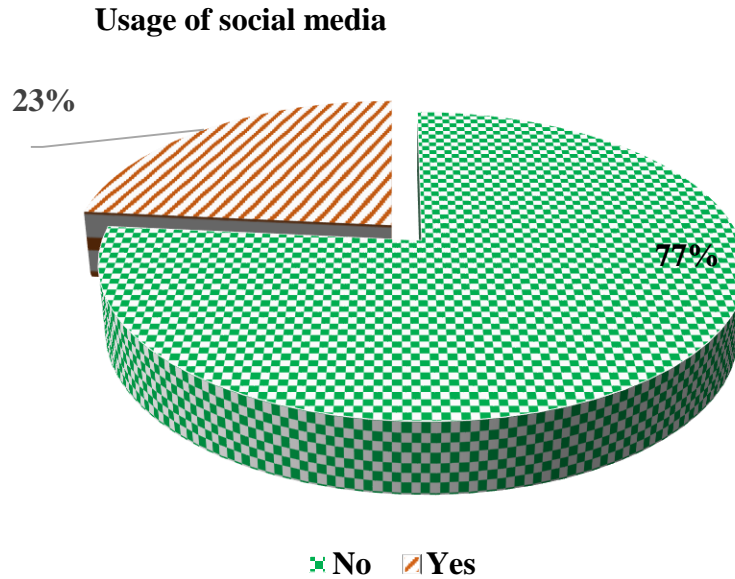


Figure 4.3: Level of social media usage by farmers

4.2.3 Reasons for not using social media

The study had further sought for explanations for non-usage of social media from the farmers who had responded to having not used the technologies. It emerged that 69 percent of the farmers who did not use social media, cited lack of a smart phones, 21 percent lack of knowhow while 7 percent and 2 percent pointed out cost and inability to know which platform to use respectively as the reasons for non-use (Figure 4.4). However, of importance to underscore is that age, sex and level of education had been identified as important factors influencing the level of familiarity with social media among the farmers. These factors could as well have contributed to the lack of need for the farmer respondents to own a smart phone. The mobile phone emerged as the main medium of access to social media with 100 percent of the farmers who answered positively to active usage selecting it.

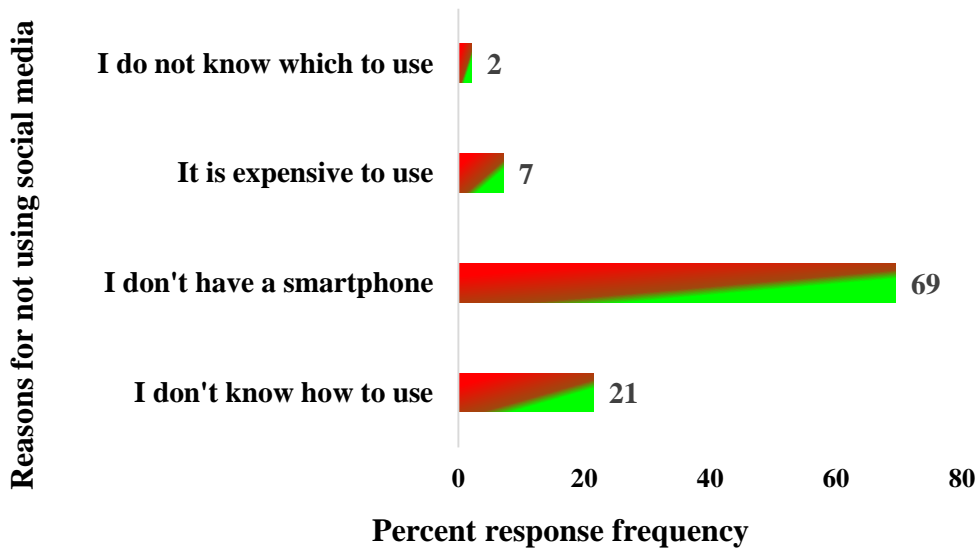


Figure 4.4: Reasons for not using social media among farmers

4.3 Analyzing the social media platforms being used by farmers and purpose for use

The purpose of this objective was to analyze the social media platforms that were preferred by the farmers and the major uses. The study went further to analyze the level of interactions with the platforms between the male and female respondents.

Having established social usage levels among the farmers, the study went to further to analyze the platforms they were using as well as the activities they engaged in through the technologies. Based on the social media classification by Kaplan & Haenlein, (2010), a list of six commonly used applications was purposively drawn from the various categories. The list was provided to respondents who indicated the ones they actively used further ranking the same by order of preference. The selected platforms were Facebook and WhatsApp representing socially integrated messaging category, Twitter from micro-blogs, Youtube drawn from content communities,

Wikipedia, classified among collaborative projects as well as LinkedIn, an application of professional networking.

4.3.1 Social media platforms being used

As depicted in Figure 4.5, WhatsApp and Facebook falling under the socially integrated messaging category were found to be the most popular platforms among farmer respondents with 100 and 82 percent usage respectively. Youtube and Wikipedia recorded an average usage of 56 and 52 percent while Twitter and LinkedIn had the lowest percent usage at 26 and 7 disparately. These results indicate that the socially integrated messaging platforms were the most popular among the respondents who confirmed usage. However, micro-blogs such as Twitter and professional networking applications like LinkedIn had the lowest usage level among the respondents. This implies that most of social media usage among the farmers revolved around socially related activities like messaging and chats as opposed to professional usage.

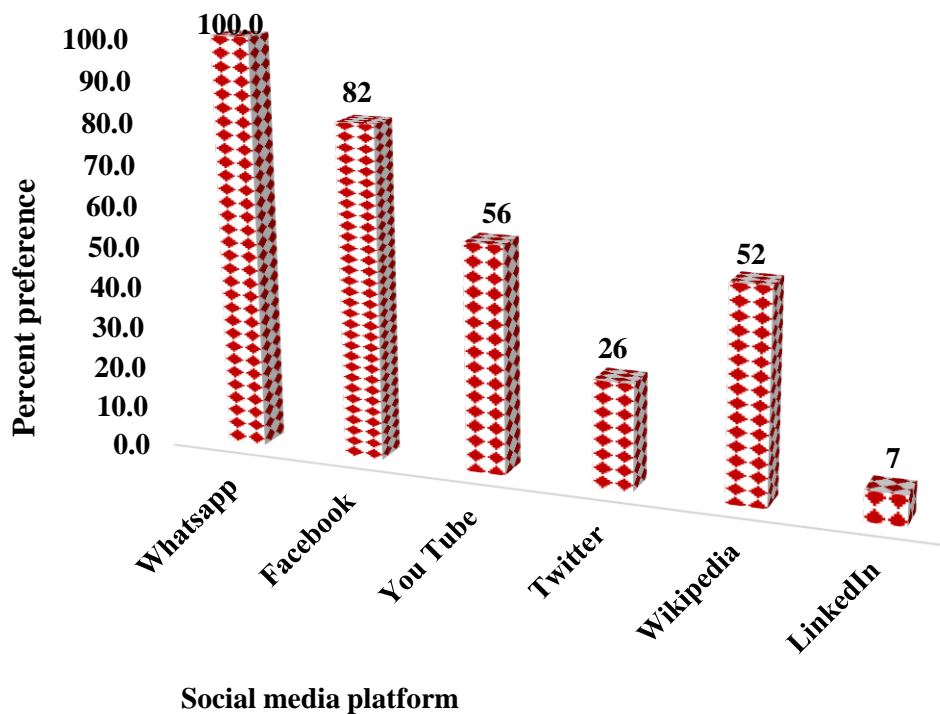


Figure 4.5: Social media platforms usage preference by farmers

Generally, the above results place WhatsApp and Facebook as the most popular platforms among the respondents hence would be the most effective to deploy for agricultural information communication among this farming community. Other applications that could come in handy probably with some bit of promotion are Twitter and Youtube. It would however, take a lot of effort promoting applications like LinkedIn since most of the respondents did not exhibit any meaningful interest in using them.

4.3.2 Major uses of social media

Results on major uses of social media among the farmer respondents are represented in Figure 4.6. Connecting with friends and relatives as well as finding out news and events were the main uses of social media platforms at 97 percent 81 percent respectively. The farmers also to a large extent (71 percent) sourced for general information through the applications while use for agricultural related activities was at 58 percent. However, it was evident that search for agricultural information did not translate to its exchange among the farmers. The findings therefore conclude that personal interest took preference as the purpose for social media usage among farmers with little utilization recorded on professional or agricultural communication activities.

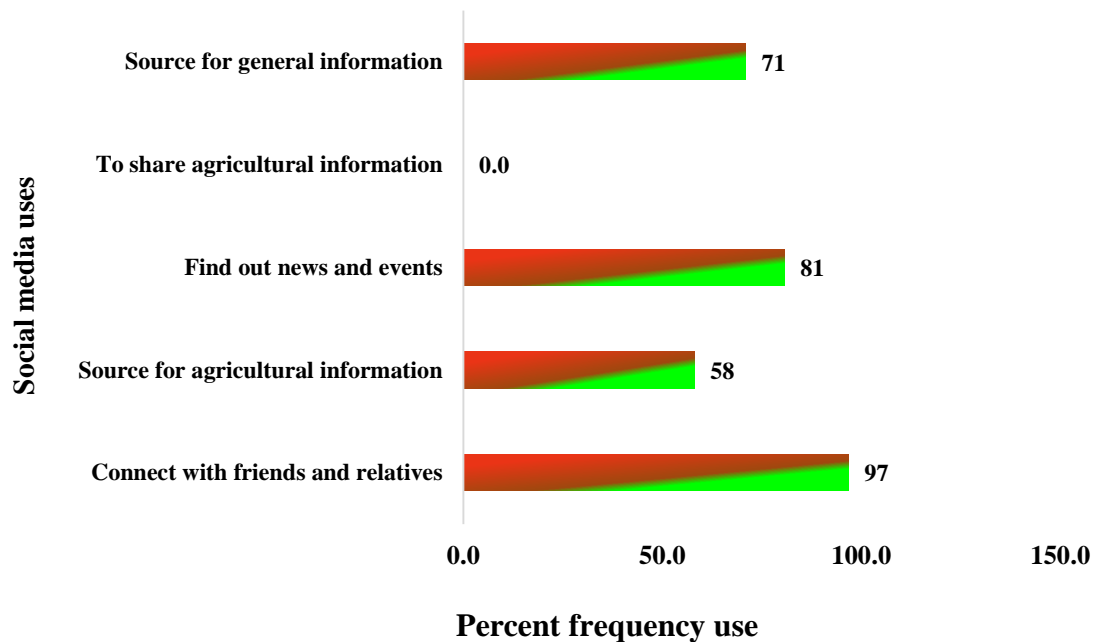


Figure 4.6: Major uses of social media among farmers

In recognition of the importance of gender in agriculture, the researcher found it imperative to disaggregate interactions with the social media platforms between male and female respondents as depicted in Figure 4.7. The general observation is that both gender had a high preference for WhatsApp and Facebook platforms. However, male farmers were found to be more versed with the rest of the applications compared to their female counterparts. The results further demonstrate a better exposure on all listed social media platforms among male farmer respondents compared to female.

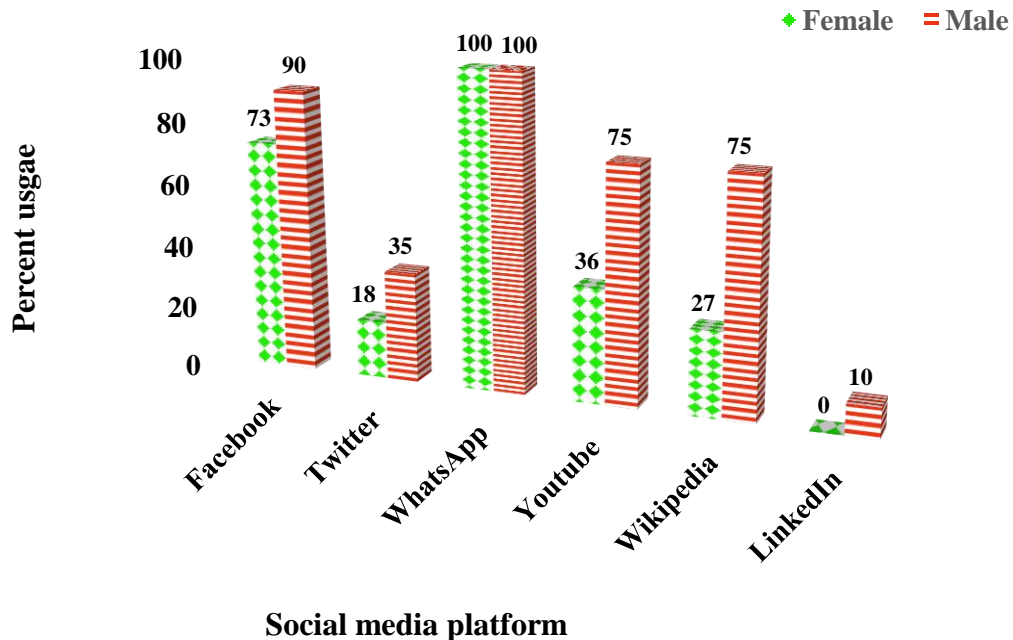


Figure 4.7: Comparing social media platforms preference between male and female respondents

The findings on the above discussed objective which was aimed at establishing the level of social media usage, platforms being used, who was using and purposes for use establishes low social usage among the farmer respondents though higher with extension agents. This therefore means that the study population is yet to leapfrog from the fast growing technologies in as far as agricultural related activities are concerned. The results correspond with those obtained by Rhoades and Aue, (2010) which established that while individual use of social media was very common, professional use in the dissemination of information by agricultural extension agents at a personal as well as an organizational level was still low.

4.4 Influence of farmers’ demographic characteristics on awareness and usage of social media

This objective evaluated age, gender and education as the demographic variables likely to impact on social media familiarity and usage among the farmers. A number of factors could be attributed to technology adoption. Numerous studies investigating acceptance and use of social media

platforms consider the impact of demographic variables such as age, gender, education and experience among others in influencing user decisions Lubua and Pretorius (2018).

4.4.1 Farmers' demographic characteristics versus familiarity

H1: There exists a relationship between age of farmer and level of social media familiarity

From the descriptive statistics depicted in Figure 4.8, younger farmer respondents recorded a higher level of social media familiarity compared to older ones with 44 percent of those in the 18-35 years category and 13 percent of the ones in 36-54 year bracket responded to being very well versed with social media while none of the farmers above 65 years had high level understanding. The results further establish that while farmers above 65 years recorded the highest proportion, 29 percent of those who had not heard of social media compared to 16 percent of those in the 36-64 age bracket, none among the respondents in the 18-35 age category responded to having not heard. A hypothesis test using Pearson Chi-Squares further established a significant positive (at $p < 0.003$) association between age and social media familiarity where the younger farmers were found to possess a higher level of knowledge compared to the older ones (Table 4.3). This therefore confirms that age is an important determinant of the level of social media familiarity among the farmers where an increase in the respondents' age resulted in a decrease in the level of familiarity.

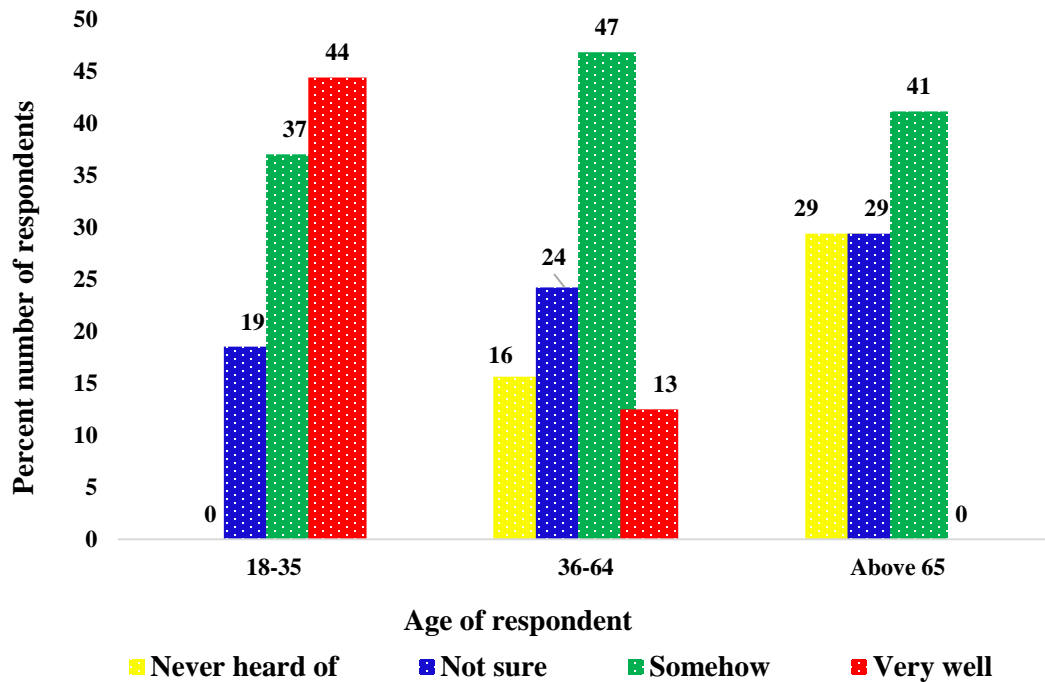


Figure 4.8: Comparing social media familiarity with the age of respondent

Table 4.3: Relationship between farmer age and familiarity with social media

	Age							
	18-35		36-64		Above 65		Total	
	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Never heard of	0	0	15	16	5	29	20	14
Probably not	5	19	24	25	5	29	34	24
Somehow	10	37	45	47	7	41	62	44
Very well	12	44	12	13	0	0	24	17
Total	27	100	96	100	17	100	140	100
Chi²								29.822
df								12
p-value								0.003

Given the results from this objective it is in order to conclude that while farming activities in the study area are majorly carried out by the older farmers, their limited knowledge on social media

obviously prevents them from benefitting from the dynamic technologies. It is therefore important for agricultural extension stakeholders in the study area to put in a lot of effort in educating this key category of farmers on how to utilize social media to enable them real-time access to useful information for their daily activities. On the other hand, the youth who are well versed with social media participate less in agricultural related activities. The high level of social media familiarity among the young people could be tapped to attract more youth to agricultural activities through the promotion of the existing social media innovations as well participatory development of new programmes that are friendly to this category of farmers.

H2: There exists a relationship between farmer's gender and social media familiarity

Despite women forming the vast majority of the farming population in the study area, their level of social media familiarity was found to be way below that of men. The descriptive statistics (Figure 4.9) revealed that male farmers had a higher level of familiarity with social media at 68 percent compared to their female counterparts at 32 percent. Women further comprised the majority in the categories of farmers who had not heard of social media, those with superficial familiarity as well as the ones not sure of their knowledge at 65 percent, 60 percent, and 79 percent respectively.

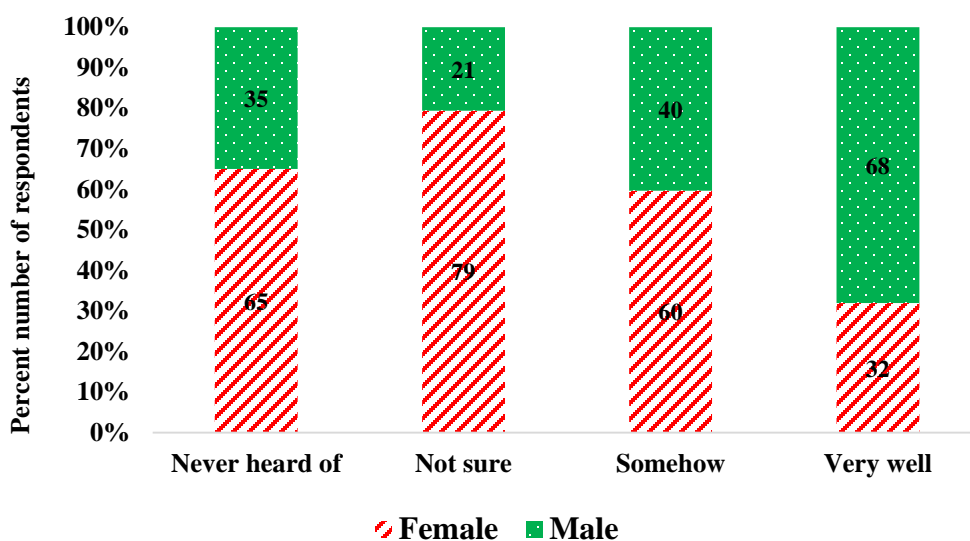


Figure 4.9: Comparing gender of respondent versus the level of familiarity with social media

A test of association with Pearson Chi-squared test confirmed the hypothesis that a significant positive relationship (at $p < 0.023$) exist between the gender of respondent and familiarity with social media where male farmers were found to be more familiar compared to the females as illustrated in Table 4.4.

Table 4.4: Comparing association between gender and familiarity with social media

	Gender					
	Female		Male		Total	
	Count	Column N %	Count	Column N %	Count	Column N %
Never heard of	13	16	7	12	20	14
Not sure	25	30	7	12	32	23
Somehow	37	45	26	46	63	45
Very well	8	10	17	30	25	18
Total	83	100.0	57	100	140	100
Chi²						11.331
df						4
p-value						0.023

This finding is given credence by a study on social media commerce in developing countries by Talat *et al.*, (2013) who conclude that unlike women, men rely less on enabling conditions when it comes to learning new technologies. This therefore, calls for special attention towards women in terms of social media awareness creation and education to ensure that the crucial farmer category leap-frogs from the existing and emerging social media agricultural related initiatives considering that contribution their to agriculture is higher than that of men.

H3: There exists a relationship between level of education and social media familiarity

According to Tang & Wu, (2015), a user's level of education is a key demographic variable in acceptance and use of a new technology. In concurrence, the descriptive results as depicted in Figure 4.10 reveal that majority, 75 percent of farmers who had attained post-secondary education had a thorough knowledge of social media compared to 18 percent and 9.5 percent of those with secondary and primary education respectively. Correspondingly, all the farmers lacking formal education had never heard of social media. It is worth noting that a positive relationship had been established between gender and social media familiarity (Table 4.4) where male farmers were found to be more versed. This position is further supported by Figure 4.1 which depicts male respondents as more educated than their female counterparts. It is also worth noting that out of the youthful farmers, 74 percent had attained either secondary or tertiary education compared to 65 percent of those above 36 years thus explaining the reason why the age bracket recorded a higher level of familiarity.

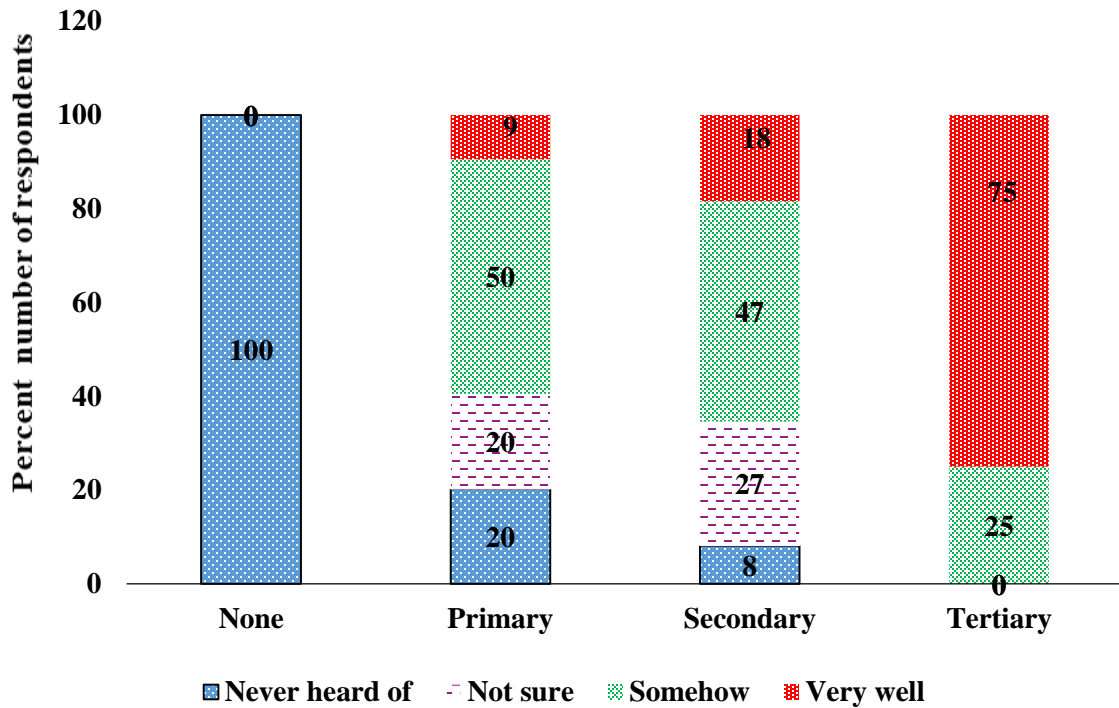


Figure 4.10: Comparing familiarity on social media with farmers’ level of education

A Pearson Chi-Squared hypothesis test further confirmed existence of a significant ($p < 0.001$) relationship between respondents level of education with social media familiarity compared the less educated (Table 4.5). This therefore means that the level of social media familiarity tended to increase as the level of respondents’ education increased while a decrease in education resulted to a decline in awareness.

Table 4.5: Comparing respondents' education level and familiarity with social media

	Education							
	None		Primary		Secondary		Tertiary	
	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Never heard of	5	100	15	20	4	8	0	0
Not sure	0	0	15	20	13	27	0	0
Somehow	0	0	37	50	23	47	3	25
Very well	0	0	7	9	9	18	9	75
Total	5	100	74	100	49	100	12	100
Chi²								47.658
df								12
p-value								0.001

From these findings it is justifiable to deduce that education is a key factor in influencing the levels of familiarity with social media among the respondents such that the as the level of formal learning increased the more knowledgeable they tended to be. It can, therefore, be interpreted that more educated farmers are likely to use social media more than those with lower levels of education. The men who are more educated and better versed with social media have a lower contribution to agricultural activities in the study area. The need to address the education gap while developing any initiatives to deploy social media in agricultural activities among this farming community cannot be overemphasized.

4.4.2 Farmer Demographic characteristics influence on social media usage

As discussed earlier, farmer gender, age and education were found to be important demographic factors influencing familiarity with social media. Similarly, the said factors turned out to be significant in relation to actual usage.

H4: There exists a relationship between Age of respondent and social media usage

As illustrated in Figure 4.11 below, the age of the respondents seemed to have an effect on social media usage where none of the farmers above 65 years had used social media with only 18 percent of those in the 36-64 age bracket answering positively to using. However, the results were different for the youthful farmers where 50 percent of those in the 18-35 age bracket responded positively to using social media. This is further supported by Figure 4.8 above in which farmers belonging to 18-35 age bracket had recorded the highest level of social media familiarity thus explaining the reason for their higher usage level compared with the older farmers.

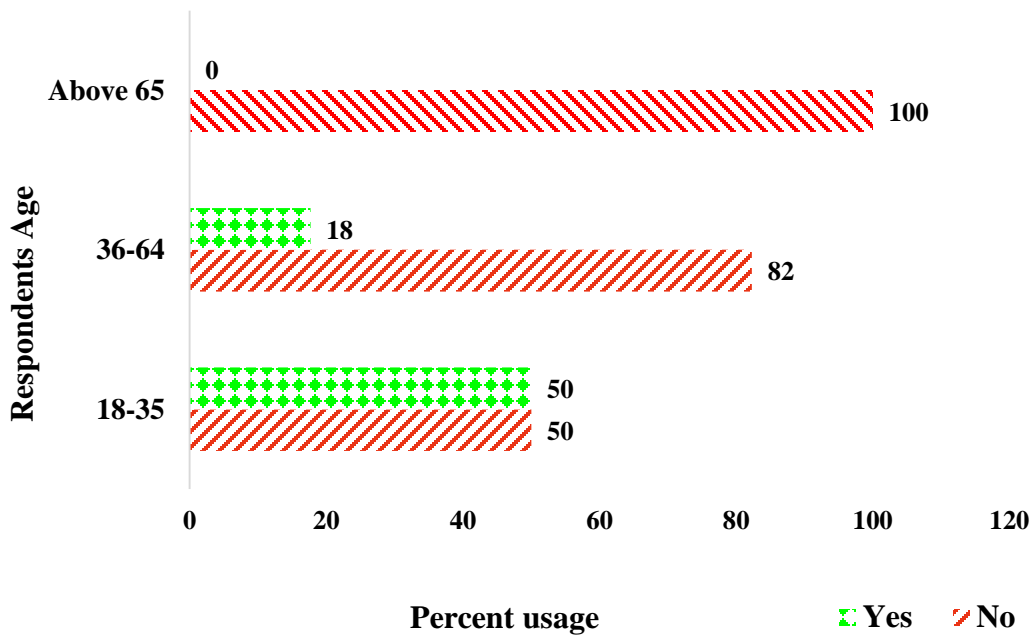


Figure 4.11: Usage of social media by age

The data was subjected to a test of hypothesis using Pearson Chi-squares test where a positive significant relationship (at $p < 0.001$) between the age of the respondents and usage of social media was established (Table 4.6). This therefore means that an increase in the age of the farmer translated to a decrease in social media familiarity with the youthful farmers actively using the technologies as compared to the older farmers. These findings concur with those of Suchiradipta and Saravanan

(2016) who in their study on the role of social media in agricultural extension conclude that online presence of older generation is still low compared to the growing number of young people using the social network platforms.

Table 4.6: Relationship between age of farmers and social media usage

	Age				Total
	18-35	36-64	Above 65	Below 18	
Never heard of	2	26	8	0	36
Not sure	2	8	0	0	10
Somehow	10	46	9	0	65
Very well	13	15	0	1	29
Total	27	95	17	1	140
Chi²					27.087
df					9
p-value					.001

H5: A relationship exists between farmer’s gender and social media usage

As depicted in Figure 4.12, male respondents formed 65 percent of the farmers who answered positively to being active social media users compared to women at 35 percent. The results were further subjected Chi-squared test of hypothesis to enable establishing any possible association between the respondents’ gender and social media usage. As depicted in Table 4.7, a significant positive relationship ($p < 0.002$) exists between usage of social media and gender of the respondent where utilization by the men was higher than that of women. Notably, male respondents had demonstrated a higher level of familiarity with social media which seems to translate to higher usage compared to women. Furthermore, the male farmers had been found to possess higher levels of education which had a positive influence on social media knowledge.

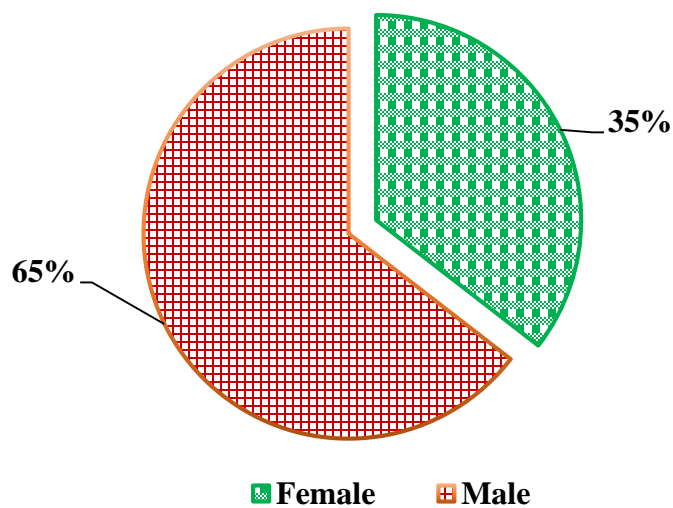


Figure 4.12: Social media usage versus respondents' gender

Table 4.7 Comparing usage of social media with gender of respondent

		Gender		Total
		No	Yes	
Gender	Female	73	11	84
	Male	36	20	56
Total		109	31	140
Chisquare				9.971
df				1
p-value				0.002

H5: There exists a relationship between farmer education and social media usage

Comparing the farmer respondents' level of education versus social media usage as illustrated in Figure 4.13, the study established that none of the farmers without a formal education had used social media while only 8 percent of those who had attained the primary level were active users. The scenario was however different for those with tertiary and secondary education where 83 percent and 30 percent respectively responded to being active social media users. A similar observation had been made in relation to social media familiarity in which education was found to have a significant positive influence.

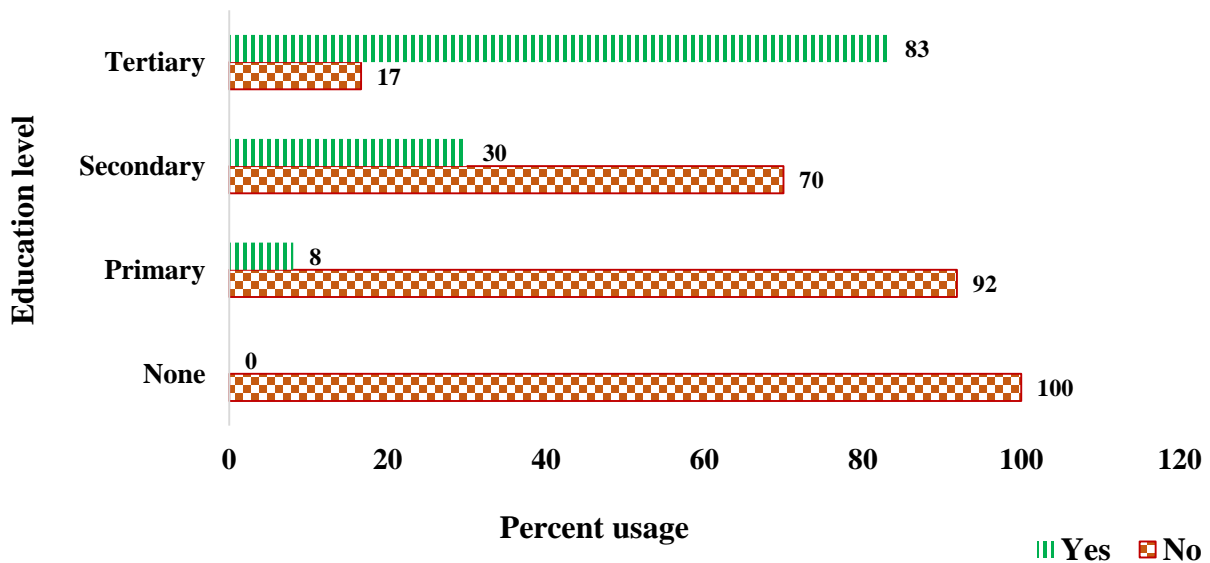


Figure 4.13: Comparing farmer level of education to social media usage

A test of hypothesis with Pearson Chi-squares confirmed existence of a significant (at $p < 0.001$) positive relationship between the respondent's level of education level and social media usage (Table 4.8). This implies that the higher the level of education the more likely the farmer would interact with the social media platforms and vice versa. Baker et al., (2007) report that a higher knowledge level gives a user an advantage in understanding the likely benefits arising from using

a new technology hence concluding that education is an important factor in influencing ones behaviour and attitude towards adoption.

Table 4. 8 A comparing education level of respondents and social media usage

	Education				Total
	None	Primary	Secondary	Tertiary	
Never heard of	5	14	3	0	22
Not sure	0	4	3	0	7
Somehow	0	45	25	2	72
Very well	0	11	18	10	39
Total	5	74	49	12	140
Chi²					56.02
df					8
p-value					.001

4.5 Assessing the influence of farmers’ perception on usefulness and ease of use of social media in agricultural activities on their intention to use

4.5.1 Perception on usefulness of social media in agricultural activities

Perceived usefulness was considered to be a dependent variable hence subjected to a select independent constructs. The aim was to establish the farmers’ perception arising from the belief that using social media for accessing agricultural information would enhance their overall productivity. As modeled by TAM, the assumption was that farmers were likely to use social media for accessing agricultural information only if they perceived it as a useful tool. According to Davis (1989), perceived usefulness directly influences an individual’s behavioral intent. Concepts on the actual importance of social media in agricultural activities were developed from the technological perspective of the researcher. Farmer perception on four independent variables; save time, enable wider farmer coverage, ease service delivery and reduce cost of delivering services was evaluated with the aim of assessing the general opinion on usefulness of social media. A five-point Likert

scale (1 for strongly disagree to 5 strongly agree) was employed for this objective and the resultant findings are discussed below.

4.5.1.1 Perception whether use of social media in agricultural extension would save time

A vast majority of farmer respondents held that deployment of social media in the delivery of agricultural extension services would save much more time compared to the current method of travel and visit which is obviously time consuming. This is illustrated in Figure 4.14 where 69 percent of the respondents strongly supported the research statement with 22 percent recording slight support. However, 6 percent of respondents expressed divergent views with 4 and 2 percent strongly and slightly disagreeing respectively. Additionally, 4 percent of the farmers were not sure if use of social would save time or not. Time is essential in delivery of agricultural innovations and as supported by Cornelisse *et al.*, (2011), real-time interaction is an important aspect of social media that could potentially enhance communication efficiency among farmers and various players in the agriculture sector for improved dissemination of information. This important characteristic of social media could be tapped to address the service delivery inefficiency challenges identified in the Kenya National Agricultural Sector Extension Policy (GoK, 2012).

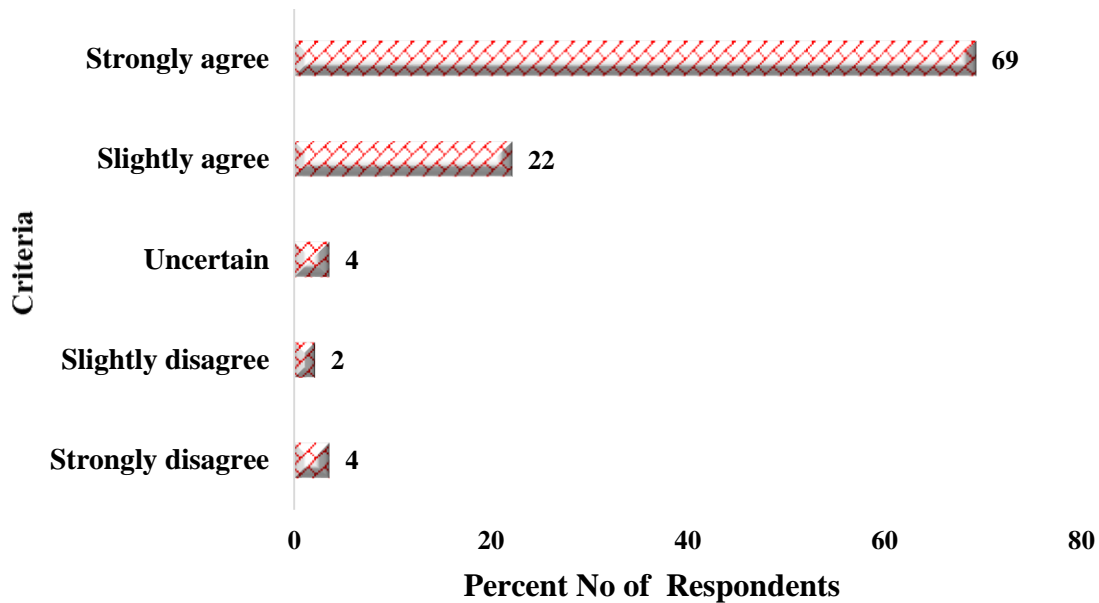


Figure 4.14: Farmer response on whether use of social media in agricultural extension would save time

4.5.1.2 Perception on whether use of social media would enable a wider farmer coverage

The study found it important to assess the perception of the farmers on the potential in social media of reaching out to more farmer in the dissemination of agricultural services. According to Salau and Saingbe (2008), the current face-to-face extension approach has limited ability to cover all farmers in a community. As depicted in Figure 4.15, there was generally a strong perception that deployment of the social media as an agricultural extension services tool would enable reaching out to more farmers than in the current situation. Majority of the farmers, (72 percent strongly and 18 percent slightly agreeing) felt that social media platforms could potentially enhance farmer coverage in the delivery of agricultural extension services. This positions social media as an important option that could augment the current scenario where the national extension staff to farmer ratio is reportedly 1:1500 resulting in limited provision of extension services in most parts of the country (Wabwoba & Wakhungu, 2013). It is also worth noting that the Ministry of

Agriculture has documented reduction in spatial coverage as one major challenge in delivery of agricultural extension services (GoK, 2012). According to Cornelisse *et al.*, (2011) social media has the potential to enable reaching out to new agricultural audience further fostering development of relationships among various actors in the sector.

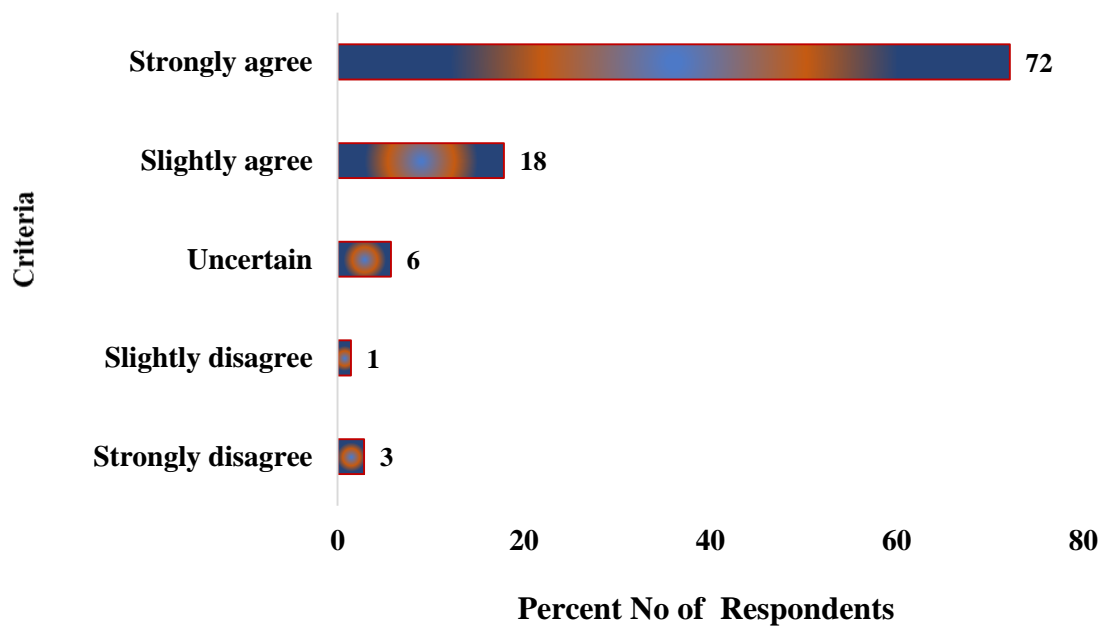


Figure 4.15: Farmers response on whether use of social media would enable a wider farmer coverage

4.5.1.3 Perception on whether use of social media could make agricultural extension easier

This assessment was found useful considering that agricultural extension is faced with a myriad of challenges comprising expanding number of farmers, vast coverage area and accessibility of new information (Salau & Saingbe, 2008). Evidently, as presented in Figure 4.16, majority of farmer respondents, (73 percent strongly and 15 percent slightly) felt that deployment of social media in agricultural extension could make provision of the services much easier. A contrary opinion was held by a mere 6 percent of the farmer respondents who either strongly or slightly disagreed that

the technologies would make agricultural extension easier while a considerable proportion, 8 percent were not sure of the possible impact. The overwhelming perception that adoption of social media in delivering agricultural of extension services could ease service delivery may have been influenced by the inevitable challenges that farmers in the study area are currently undergoing since they have to assemble into their extension groups to facilitate access by the agricultural officers. Working in groups could at times be challenging as a result of group dynamics hence it is not always automatic that the groups are strong enough to ensure that all the members are active (CRS and MEAS, 2015) which could compromise delivery of agricultural services.

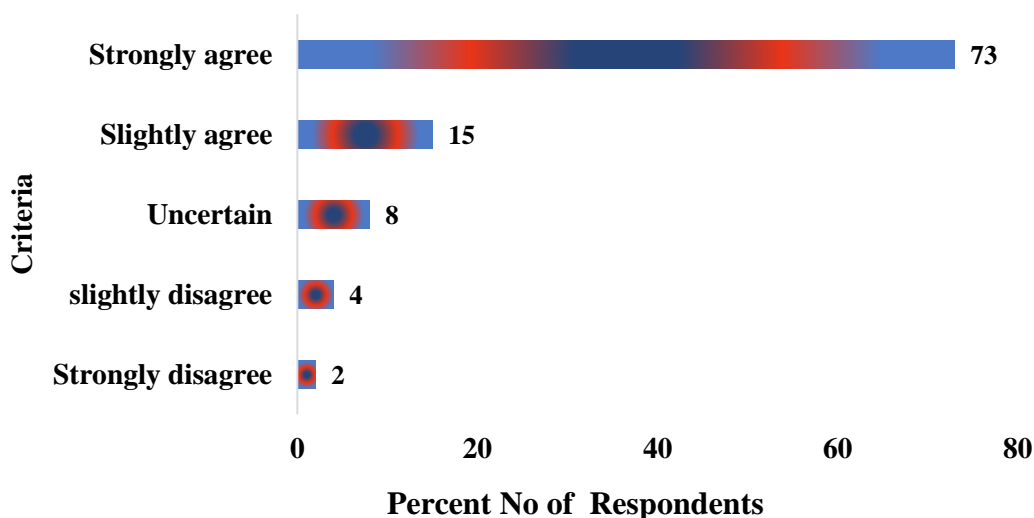


Figure 4.16: Farmer perception on whether using social media would make agricultural extension easier

4.5.1.4 Perception that using social media in agricultural extension would reduce cost of services

Cost of accessing information has been listed as a significant barrier to adoption of agricultural technologies especially in developing countries which majorly employ traditional means of dissemination such as travel and visit (Aker, 2011). This construct sought to establish the farmer

perception whether use of social media in accessing agricultural information could reduce the cost of service delivery. The farmer respondents to a large extent perceived that it would cost less to deliver agricultural extension services if social media platforms were adopted as means of communication. This is depicted in Figure 4.17 where 56 percent strongly agreed with 23 percent slightly agreeing. However, a fairly noteworthy proportion, 15 percent of respondents were not convinced that using social media in agricultural extension could reduce cost of service delivery while 6 percent were not sure of the possible impact.

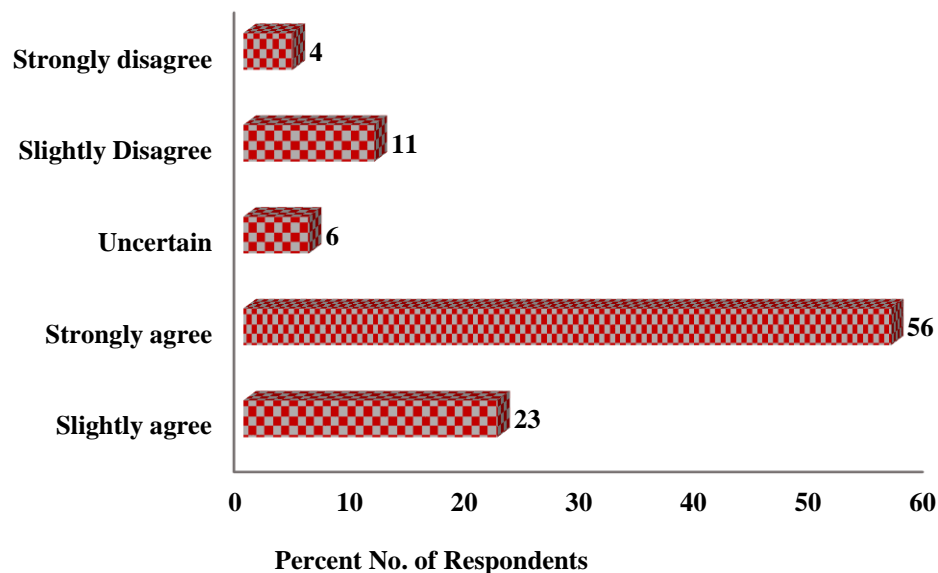


Figure 4.17: Farmer perception on whether using social media could reduce cost of agricultural extension

4.5.1.5 Overall perception on usefulness of social media in agricultural extension

Figure 4.18 demonstrates that majority (78 percent) of the farmer respondents believed that social media could be useful in agricultural extension with 60 percent recording a very high opinion and another 18 percent a high perception. Remarkably, 10 percent of the farmers did not attach a lot of

usefulness on the technologies while another 12 percent lacked a clear perception on the possible impact of the platforms. Interesting, even after the farmer respondents demonstrated a relatively low level social media familiarity and usage as discussed previously, a vast majority perceived that the platforms could be quite useful in agricultural extension. This could be interpreted that most of the farmers recognize the potential usefulness of social media in agricultural services hence it would not require a lot of effort in having the farming community embrace the technologies.

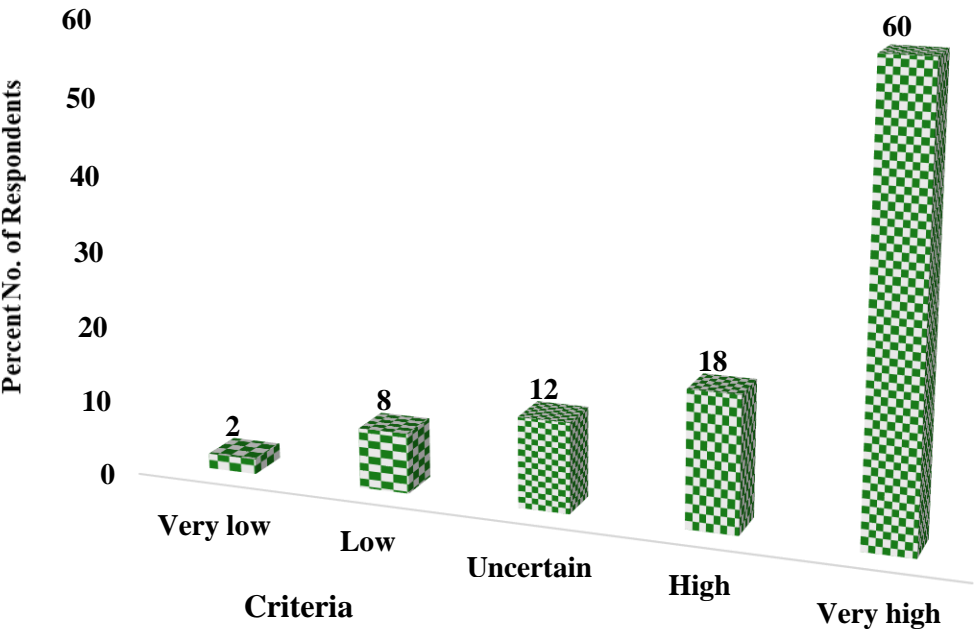


Figure 4.18: Overall rating of perceived usefulness of social media by farmers

Analysis of Variance (ANOVA) with a p-value of <0.001 and a mean of 1.952 indicated that the four independent variables significantly predicted the overall social media usefulness (Table 4.9).

Table 4. 9: Analysis of Variance on perceived usefulness of social media in agricultural extension

	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.809	4	1.952	5.262	0.001*
Residual	50.461	136	.371		

The model summary as shown in Table 4.10 produced a positive correlation coefficient (R) of 0.366 thus bringing out a positive correlation between the independent variables and the dependent variable, overall social media usefulness. However, the coefficient of determination (R^2) shows that variability in independent variables only explains 13.4% of the variability in overall social usefulness (Table 4.10).

Table 4.10: Model summary for perceived usefulness

R	0.366
R^2	.134

The regression model derived was as $Y = 3.106 + 0.108 X_1 + 0.086X_2 - 0.056X_3 + 0.191X_4$. As illustrated in Table 4.11, which analyzes the association between the independent variable and the dependent variables the regression model indicates that farmers' perception that social media would make agricultural extension much easier was the most significant predictor ($\beta_5 = 0.191$, $p < 0.003$) of the overall perception on usefulness of the technologies. This therefore means that most of the respondents' main concern was how to ease access to agricultural extension services as compared to all the other variables.

Table 4.11: Correlation coefficient of variables

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	3.106	.359		8.648	.000
Timesaving	.108	.070	.152	1.538	.126
Wider farmer coverage	.086	.096	.117	.899	.370
Reduces cost	-.056	.080	-.084	-.704	.483
Make Agriculture Extension Easier	.191	.064	.257	2.973	.003*

* $p \leq .05$, $N = 140$

The descriptive results on this objective clearly indicate that farmers in the study area highly acknowledge the potential impact of social media in delivery of services. However, while the test of ANOVA indicates that the four independent variables were important predictors of perceived usefulness, the regression model attaches more importance to making agricultural extension easier variable as a key determinant to overall perception on social media effectiveness.

4.5.2 Perception on ease of use of social media in agricultural activities

Perceived ease of use in this study was taken as the extent of belief among the respondents that they would be able to use social media easily and manage overall agricultural communication without much effort. Rogers (1962) and Zeithmal *et al.*, (2002) underscore the importance of perception on ease of use in that it denotes the extent to which an innovation is seemingly taken not to be complicated to comprehend, learn, or operate. Correspondingly, Venkatesh and Davis (2000) consider perceived ease of use as the extent to which a person believes that interacting with a certain technology would be effortless. Four independent variables namely cumbersomeness, easy to learn, skills and effort required as well as perceived enjoyment were used to test the respondents' perception towards ease of use of social media in agricultural related activities.

4.6.1 Perception on whether social media platforms would be cumbersome to use in agricultural extension

The research question was framed in a way to suggest that it would be cumbersome to use social media in exchange of agricultural information. As depicted in Figure 4.19, the findings indicate that 52 percent of farmer respondents disagreed strongly and 14 percent slightly that they would find social media cumbersome for use in agricultural extension. In a confirmatory response however, 31 percent of the respondents (18 percent strongly and 13 percent slightly) believed it would be cumbersome to deploy social media in agricultural related exchange services while another 5 percent did not know what to think on the matter. These results could probably be explained by earlier observations where 18 percent of the farmers admitted having had no interaction with social media at all, 51 percent acknowledging limited knowledge while 3 percent were not sure of their level of understanding. Furthermore women who formed the majority of the respondents (60 percent) had also been found to be more limited in terms of social media familiarity.

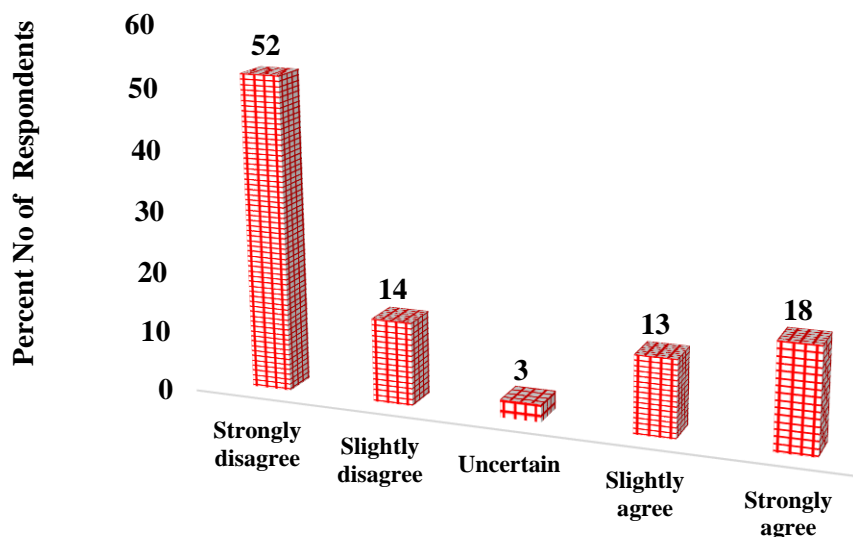


Figure 4.19: Farmers’ perception on whether social media platforms would be cumbersome to use it agricultural extension

4.6.2 Perception on whether it would be easy to learn social media platforms

This construct was aimed at assessing the farmer perception on whether it would be easy for them to learn how to navigate the social media platforms if employed for agricultural extension services. The results as displayed in Figure 4.20 established that most of the farmer respondents did find it complicated for them to learn how to use social media where 70 percent strongly agreed to easy learning with another 11 percent slightly agreeing. However, 15 percent felt it would not be as easy while 4 percent were found not to be sure whether it would be easy for them to learn or not. These findings demonstrate a high level of interest among the farmers use of social media in agricultural extension considering that most of them had acknowledged to having not used the technologies as documented in the first objective.

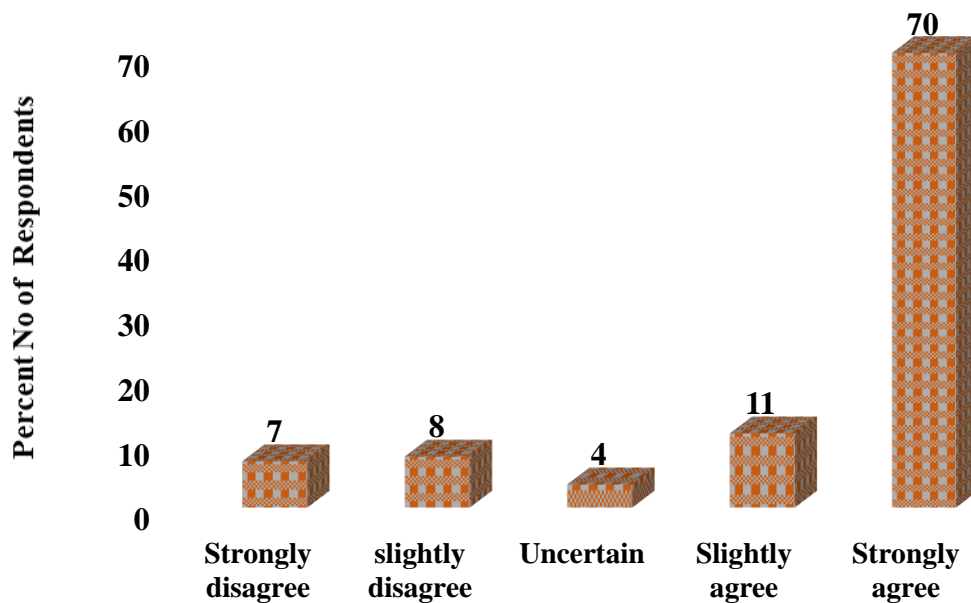


Figure 4.20: Farmer perception on whether it would be easy to learn social media platforms

4.6.3 Perception it would require a lot of skills and effort to use social media platforms

Furtherance to establishing respondents' perception on the ease of using social media, the researcher sought to assess their perception on whether it would require a lot of skills and effort for

one to be able to use social media for agricultural activities. As shown in Figure 4.21, a reasonable proportion of farmer respondents believed it would not require a lot of skills or effort for them to be able to interact with social media where 58 percent strongly and 9 percent slightly disagreed with the research question. However, a notable proportion, 30 percent of the farmers held that one required to be skilled and putting in a lot of effort to be able to use the technologies while another 3 percent were found to be uncertain. Interestingly, the above findings indicate that most of the farmers believed it would not require a lot of skills and effort to be able to use social media, even though 75 percent had not used the platforms as reported earlier. This scenario derives an explanation from the reasons given by the farmer respondents for not using social media where only 21 percent said they did not know how to use while 69 percent cited lack of smart phones

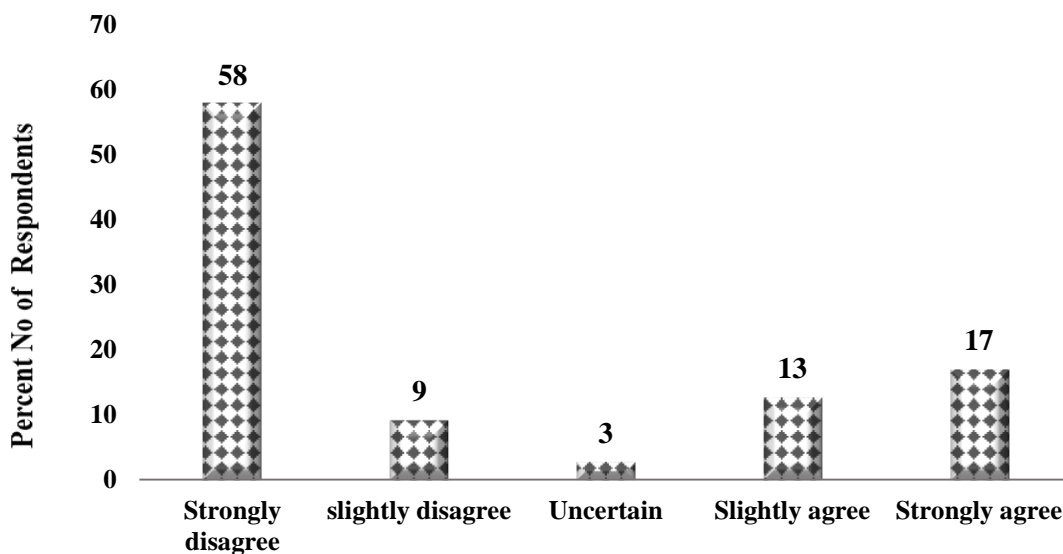


Figure 4.21: Farmers’ perception on whether it would require a lot of skills and effort to use social media

4.6.4 Perception it would be enjoyable to use social media in agricultural extension

According to Davis and Warshaw (1992) enjoyment is defined as the central reward resulting from the use of a technology. The fundamental assumption of this study was that perceived enjoyment

would directly influence respondents' social media acceptance and usage in agricultural extension. The study therefore sought to assess the respondents' perception on whether it was going to be enjoyable to use the social media platforms in agricultural related activities. The results of this investigation as shown in Figure 4.22 demonstrate a high level of positive perception. It emerged that 77 percent of the farmer respondents strongly indicated they would find it enjoyable to use social media in agricultural activities with another 9 percent slightly agreeing. Holding a contrary perception was a relative small population of 10 percent respondents who either strongly or slightly disagreed that social media would be enjoyable to use while another 4 percent were not sure what to expect.

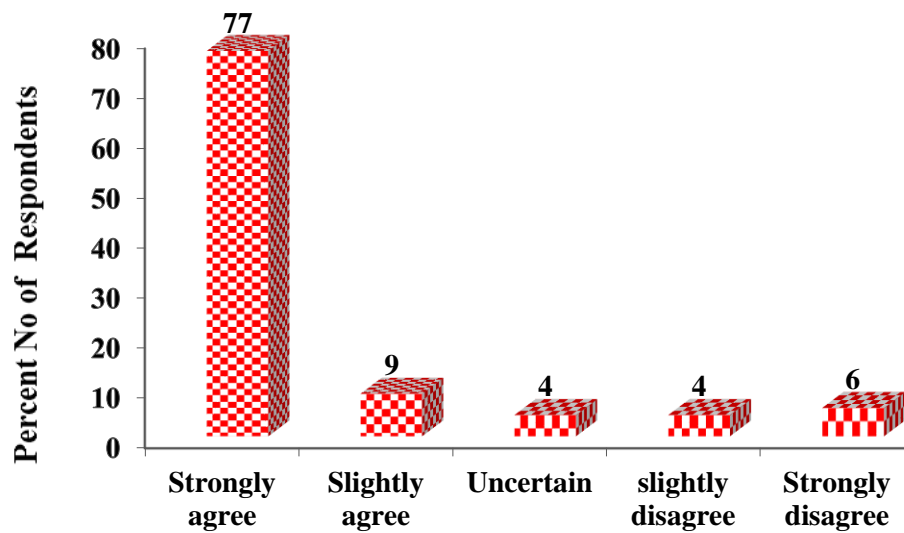


Figure 4.22: Farmer perception on whether it would be enjoyable to use social media in agricultural extension

4.6.5 Overall perception on ease of use of social media in extension services

In general and as illustrated in figure 4.23, a vast majority of the farmers interviewed, 74 percent (64 percent strongly and 10 slightly) did not think they would have a problem using social media

platforms in agricultural extension in relation to ease of use of the technologies. A relative small proportion, 21 percent were however not comfortable with the technologies thus felt it might not be very easy to use them while another 5 percent were unable to declare their perception.

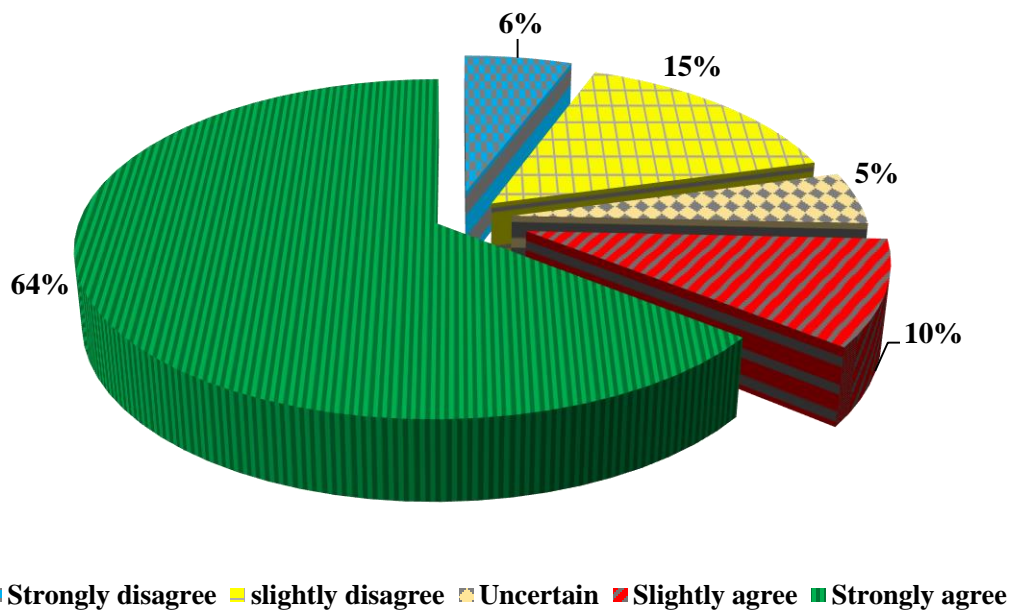


Figure 4.23: Overall perception on ease of use of social media by farmers

4.6.5.1 Analysis of Variance (ANOVA)

The above results were further subjected to an analysis of variance (Table 4.12) which revealed that the four independent variables were significant predictors of the overall respondents' perception on ease of use (at $p < 0.001$) and a mean of 6.067.

Table 4.12: Test of ANOVA on ease of use of social media among farmers

	Sum of squares	df	Mean Square	F	Sig.
Regression	24.269	4	6.067	10.222	<0.001
Residual	80.724	136	.594		

The analysis model as shown in Table 4.13 had a correlation coefficient (R) of 0.481 thus demonstrating a positive correlation between the four independent variables and overall farmers' perception on ease of use of social media which was the dependent variable. The model's coefficient of determination (R^2) of 23.1% of the variability in overall ease of use was explained by variability in independent variables.

Table 4.13: Model summary ease of use

R	.481
R^2	.231

The regression model derived as $Y = 3.894 + 0.036 X_1 + 0.200X_2 - 0.149X_3 + 0.041X_4$ further revealed that two variables, easy to learn and effort and skill had significant influence (at $\beta_3 = 0.20$, $p < 0.001$ and $\beta_2 = -0.149$, $p < 0.002$) respectively on overall farmers' perception on ease of use of social media in agricultural activities. These results therefore imply that a higher farmer perception that social media would be easy to learn was more likely to positively impact on their general attitude towards ease of use. However, it emerged that the more the farmers perceived it would require a lot of effort and skills to use social media in agricultural activities the more likely it was going to negatively influence their perception on ease of use.

Table 4.14: Correlation coefficient of variables

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	3.894	.459		8.486	<0.001*
Cumbersomeness	.036	.046	.065	.780	.437
Easy to Learn	.200	.050	.320	3.974	<0.001*
Effort and Skill	-.149	.047	-.279	-3.168	.002*
Enjoyment	.041	.082	.039	.501	.617

* $p \leq .05$, $N = 140$.

Summary

Generally, the above results/findings could be interpreted to mean that a vast majority of the respondents believe that it would not be challenging to employ social media in agricultural activities. Additionally, the four constructs, cumbersomeness, easy to learn, effort and skill as well as enjoyment used in assessing the respondents' perception were proved to be important predictors of perceived ease of use.

4.6 Intention to use

Having evaluated the respondents' perception on social media usefulness and ease of use, it was found it necessary to subject the two variables and alongside perceived enjoyment construct to test any possible relationships with the intention to use the technologies. This was achieved through an analysis of variance which establish that the three independent variables were significant predictors of the respondents' intention to use social media (at $p < 0.001$) and a mean of 15.74 (Table 4.15).

Table 4.15 Test of ANOVA of farmers' intention to use social media in agriculture

	Sum of Squares	df	Mean Square	F	Sig.
Regression	47.221	3	15.740	20.987	<0.001*
Residual	102.751	137	.750		

The analysis model as summarized in Table 4.16 shows a correlation coefficient (R) of 0.561 thus demonstrating a positive correlation between the four independent variables and overall farmers' perception on ease of use of social media which was the dependent variable. The model's coefficient of determination (R^2) of 31.5% of the variability in overall ease of use was explained by variability in independent variables.

Table 4.16 Summary model for behavioral intention to use social media in agriculture

R	.561
R^2	.315

The regression model showing the correlation coefficient of variables as tabulated in Table 4.17 further shows measure the degree to which changes in the value of one variable predicted change in the value of another. The regression model derived as $Y = 0.126 + 0.466 X_1 + 0.114X_2 - 0.385X_3$ reveals that ease of use and usefulness significantly and positively (at $\beta_2 = 0.466$, $p < 0.001$ and $\beta_4 = -0.385$, $p < 0.001$) respectively influenced the respondents' intentions to use social media in agricultural extension. While both variables have positive influence, perceived ease of use seems to have more influence on intention to use having recorded a higher correlation coefficient of 0.466.

Table 4.17: Correlation coefficient of variables

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	.126	.657		.192	.848
Ease of Use	.466	.090	.390	5.200	<0.001
Enjoyment	.114	.121	.071	.946	.346
Perceived Usefulness	.385	.091	.305	4.206	<0.001*

* $p \leq .05$, $N = 140$.

These findings correspond with those from various authors. According to Davis, F. (1989) for instance, perceived usefulness directly influences an individual's behavioral intention. Likewise, Lai (2016), considers perceived ease of use and perceived usefulness as influential in motivating users to accept and adopt an information system. TAM which is the foundation of this study holds that a person's intention to or actual use of a new technology is determined by their perception on its usefulness and ease of use (Davis, 1989; Venkatesh & Davis, 1996). The research therefore concludes that perceived usefulness and perceived ease of use positively influence an individual's resolve to use or not the social media platforms. It further holds that a social media technology could be useful but an individual's decision to adopt will to a large extent be influenced by their perception that a minimum amount of effort will be required in the process of usage.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study was carried out among farmers and extension service providers and had four specific objectives; to assess the level of social media familiarity and usage among farmers; to analyse the social media platforms being used by farmers and purpose for use; to assess the influence of farmers' demographic characteristics on awareness and usage of social media and to assess how farmers' perception on the usefulness and ease of use of social media in agricultural activities influence their behavioural intention to use. This chapter consequently presents the deductions made from the results/findings of the study based on the underlying objectives as well as the research hypotheses and questions. Additionally, it presents an inferential perspective which forms the basis for making relevant recommendations in regards to the subject under investigation.

5.2 Summary

5.2.1 Demographic characteristics of the respondents

The study population was dominated by women for both farmers and extension services providers. In terms of age, the findings recorded low engagement of youth in agriculture further confirming that agricultural activities are still characterized by aging population (Afande *et al.*, 2015; Oto & Shimayohol, 2011). The farmers in the study area registered a relatively low education level where a vast majority were primary school leavers with less than half having acquired post primary and in addition there was a small proportion of the respondents who had no formal learning. The land sizes ranged between a half and five acres.

5.2.2 Familiarity and usage level of social media among farmers

Evidently, while a vast majority of farmers in the study area recorded some level of familiarity with social media only a small proportion had a high understanding. Actual social media usage among the farmers was however found to be quite low with most respondents citing lack of smart phones as the major reason for non-use of the technologies. However, both descriptive and inferential analysis revealed that age, sex and education level of the farmers played significant roles in influencing usage. Younger farmers were found to be more familiar with social media further recording a higher level of usage. Similarly, the more educated farmers registered a higher usage level compared to those with little formal learning. In terms of gender, the men who had actually been found to be more educated also recorded a higher usage level compared to women. Notably, though the study records social media usage among the farmers, social activities dominated the purposes for use with little or nothing going to professional interests. Rhoades and Aue (2010), report that personal use of social media is very common while there is still low professional use for information access.

5.2.3 Preference of social media platforms

WhatsApp application emerged the most preferred social media platform with Facebook, YouTube, Wikipedia and Twitter recording relatively lower levels of rating. The study further established that farmers had not in any way interacted with LinkedIn application which is a professional networking platform.

5.5.4 Perception on usefulness of social media in agricultural activities

The general perception among the respondents was that social media would be quite useful if deployed in agricultural extension. Interesting, even after the farmer respondents demonstrated a relatively low level of familiarity with social media, a vast majority held a highly perceived that the

platforms could be very useful in the delivery of agricultural extension services. This therefore means mean that both the farmers highly acknowledge the potential impact of social media in delivery of services. The four independent variables emerged to be important predictors of perception on usefulness among the respondents with more emphasis attached to perception that social media could make agricultural extension easier.

5.2.5 Perception on ease of use of social media in agricultural activities

The results obtained in this case are no different from what was found while assessing perception on usefulness. In general, a vast majority of the respondents believe that it would not be challenging to employ social media in agricultural extension. The four constructs, cumbersomeness, easy to learn, effort and skill required as well as enjoyment used in assessing the respondents' perception were proved to be important predictors of perceived ease of use. Easy to learn and effort and skill required were found to be important in terms of influencing user perception on ease of use.

5.2.6 Intention to use social media in agricultural extension

Perceived usefulness and ease of use were found to have a positive significant influence on the farmer respondents' decision on whether to accept and use social media in agricultural extension. This therefore means that the respondents were willing to use social media technologies so long as there was some value derived from usage and if a farmer did not require much effort to be able to use the platforms. The study further established that perceived ease of use had a higher influence on the intention to use compared to perceived usefulness thus meaning that a technology could be very useful but its adoption is heavily dependent on the user's ability to operate.

5.3 Conclusions

While social media has been around and taking the communication industry by storm for more than two decades, it's uptake for use in agriculture in the study area is quite minimal. This has mainly

been occasioned by a lack awareness on the existence of the platforms coupled with limited knowhow on usage as well as well as lack of requisite gadgets by farmers.

Evidently, the agricultural extension and advisory services that were designed to facilitate effective coverage of the rural small holder farmers are currently faced with a myriad of challenges, hence widening the information asymmetries between the researcher and the farmer. This continues to hinder adoption of tested and proven agricultural technologies resulting to perpetual reduction in productivity. A paradigm shift from the current methods of delivery of extension and advisory services to farmers is necessary where multipronged approach is required. Information and Communication Technologies (ICTs) opens new avenues for facilitating communication.

Adoption of social media in agriculture will facilitate connection and interaction with one's audience so as to sensitize and help them to know more about the sector. The technologies will make promotion of extension programs easier by allowing real time communication with farmers, enabling reaching out to new audiences, and promoting growth of relationships among players in agricultural sector (Cornelisse *et al.*, 2011).

Social media should therefore be made a platform of engagement where agricultural information and technologies are the content with the aim of attaining mass influence (Varner, 2012). This will give farmers avenues and an opportunities that enable direct connection with the relevant stakeholders in agriculture while at the same time enabling mass-personal communication (Carr & Hayes, 2015).

Use of social media in agricultural extension will ensure that farmers do not over rely on one source of information but are able to enhance interactions with peers and other sector players such that real-time access to tested and proven agricultural facts is achieved for improved productivity.

Similarly, communication for extension service providers will become much easier and hassle free as personal interaction becomes less complicated through platforms like WhatsApp, Facebook and Twitter that were highly rated by the study population. Adoption of the technologies will promote high interaction levels among users to the benefit of everyone involved. The target farming community have demonstrated a positive perception on social media as a tool for communication in agricultural activities which obviously influences their acceptance and intention to use the platforms if deployed.

From the reviews and study findings, it is evident that social media is rapidly becoming an essential part of agricultural communication. However, it is clear that the farming community in the study area is yet to adapt to the paradigm shift owing to a number of challenges as demonstrated by the findings. The question that all stakeholders in the agricultural sector should therefore be grappling with is how best to harness these technologies in the delivery of extension and advisory services for improved agricultural productivity.

5.4 Recommendations

To enable the farmers and agricultural sector as a whole leapfrog from these versatile technologies, faster actions are required to facilitate social media usage particularly by the masses of rural families engaging in farming activities. The study therefore makes the following individual and organizational recommendations that could enhance social media awareness and usage by farmers;

5.4.1 Individual level

- Peer learning among the farmers through the existing extension groups should be encouraged where those competent in social media take the lead of educating the less literate on how to use the platforms.

- Farmers in the study area should be encouraged to take the initiative of acquiring smart phones through which they will be able to interact with the social media platforms.
- Extension agents in the study area are challenged to start social media groups with the farmers already registered in the existing extension clusters to facilitate real-time engagements in agricultural related activities. The service providers should aim to ensure their followers are constantly involved through continuous discussions to eventually form a mutually generated knowledge forum.
- To be able to realize great impact continuous engagement at individual level is necessary while constant fruitful debates will encourage vast numbers of rural communities to get on board.

5.4.2 Organizational level

- Key players in agricultural extension such as the County Governments and research institutions are challenged to conduct social media awareness campaigns and other initiatives targeting the rural areas with the aim of increasing technical literacy among the farming communities.
- Audience segmentation is recommended during social media sensitization trainings in order to focus on individual farmer needs such as preferred social media platforms as well as the relevant content so as to reduce the confusion and redundancies that may result from the various available social media platforms.
- Creation awareness should give particular attention to the women who form the vast majority of the farmers but with limited social media knowledge and low usage levels.

- The high social media knowledge and usage among the youth in the study area should be harnessed so as to attract more of this age group into agricultural activities.
- County Governments and research organizations should consider employing communication or social media officers responsible for managing social media accounts through content creation with experts as well gatekeeping.
- Use of farmer friendly language during social media content development is recommended to ensure that no user is left out considering the low education level of the population under investigation.

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APPENDICES

Appendix 1: Athena Horticultural Self-help group Registration Certificate

Certificate No. 3721692


Republic of Kenya

MINISTRY OF LABOUR, SOCIAL SECURITY AND SERVICES

Certificate of Registration of Self-help Group/Project

This is to certify that

ATHENA HORTICULTURAL SELF HELP GROUP

Group Name / Project DSS/TKA/SHG/017/162	Date of Registration 25 TH MAY 2017
Registration No. KIANJAU	Constituency THIKA TOWN
Sub-location / Ward MAKONGENI	Sub County THIKA WEST
Location MUNICIPALITY	County KIAMBU
Division	

*is registered with the Office of the Sub County
Social Development Officer as a Self-Help
Group / Project*

Name
County Social Development Coordinator



Name Signature 
Sub County Social Development Officer

25TH MAY 2017
Date of Issue



Note: The Contents of this Certificate should not be erased, altered or defaced in any way.

Appendix 2: Ngoliba United Farmers Self-help Group Registration Certificate


Republic of Kenya

Certificate No. **3729066**


**MINISTRY OF EAST AFRICAN COMMUNITY,
LABOUR AND SOCIAL PROTECTION**

Certificate of Registration of Self-help Group/Project

This is to Certify that

NGOLIBA UNITED PIG FARMERS SELF HELP GROUP
.....
Group Name / Project

DSS/TKA/SHG/017/209 Registration No.	10 TH JULY 2017 Date of Registration
NGOLIBA Sub-location / Ward	THIKA TOWN Constituency
NGOLIBA Location	THIKA EAST Sub County
THIKA EAST Division	KIAMBU County

is registered with the Department of
Social Development Officer

Name..... **CONSTANCE NGOA** Signature..... 
County Coordinator/ Sub County Social Development Officer

10TH JULY 2017
.....
Date of Issue



Note: The Contents of this Certificate should not be erased, altered or defaced in any way.

Appendix 3: Data collection tool

Dear respondent,

The researcher is a student pursuing Master's Degree in Agricultural Information and Communication Management (AICM) at the University of Nairobi. As part of the Program the researcher is expected to write a thesis. The title of the proposed thesis is: ***FACTORS INFLUENCING ACCEPTANCE AND USE OF SOCIAL MEDIA PLATFORMS AMONG FARMERS AND EXTENSION AGENTS FOR ENHANCED DELIVERY OF AGRICULTURAL SERVICES IN KIAMBU COUNTY.***

The researcher thus humbly requests you to assist her by filling this questionnaire so as to be able her carry out the study. All information you provide here including names of your institutions will remain confidential and will be used strictly for purposes of this research. The results of the research will be useful to stakeholders in the Agriculture Sector and may help in informing the course of direction in dissemination of agricultural information.

Yours Sincerely,

Anne Kimani
Masters in Agricultural Information and Communication Management
UoN
NAIROBI

Guidelines: *Fill the following questionnaire as truthfully as possible. Use a symbol of your choice to indicate your answer where necessary.*

SECTION A: BACKGROUND INFORMATION

Site Description

Date of interview _____ Enumerator Name _____

County _____ Sub-County _____

Ward _____ Village _____

SECTION B: DEMOGRAPHIC INFORMATION

1. Name of interviewee _____

2. **Sex:** 1. Male _____ 2. Female _____

3. **Age:** (i) below 18 _____ (ii) 18 to 35 _____ (iii) 35 to 64 _____ (iv) Above 65 _____

4. **Marital status:** (i) Married _____ (ii) Single _____ (iii) Divorced _____
(iv) Separated _____ (v.) widowed _____

5. **Education level of interviewee:** Primary _____ Secondary _____ Tertiary _____ None _____

6. Please indicate the size of your land in terms of acres.

0 to 1 1 to 5 5 to 10 Above 10

7. List **At MOST THREE** major agricultural enterprises in your farm starting with the most important

i. _____

ii. _____

iii. _____

8. For how many years have you been involved in agricultural enterprises?

i. Below 5yrs () ii. 5-10yrs () iii. over 10yrs ()

SECTION C: ACCESS TO AGRICULTURAL INFORMATION

1. Which are your sources of agricultural information among the ones listed below? **Kindly tick below ranking from 1-5 (where 1 is the most important and 5 least important)**

Source	Yes	No	Rank
Extension Agents			
Radio			

Television				
Peer Farmers				
Internet				

2. What kind of agricultural information do you source for? Give **at MOST THREE** *starting with the most important*

- i. _____
- ii. _____
- iii. _____

3. In your opinion, how useful are agricultural extension services to you as a farmer?

- i. Not useful at all ()
- ii. Somewhat useful ()
- iii. Not sure ()
- iv. Moderately Useful ()
- v. Extremely Useful ()

4. Which among the following challenges do you encounter while searching for agricultural information from extension services providers? *Kindly tick below ranking from 1-5 (where 1 is the most important and 5 least important)*

Challenge	Yes	No	Rank
Limited time with extension agents			
Limited individual attention by agents			
Time wasted searching for services			
Unavailability of specific information			
Others (specify)			

5. How familiar are you with social media?

Never heard of () Not sure () Somehow () Very ()

6. Are you currently using any social media platform? YES () NO ()

If NO please answer question 7 then proceed to section D. If YES, please answer questions 8-14)

7. If **NO**, please indicate whether any of the following reasons prevents you from using social media ranking them in order of importance (*where 1 is the most important reason*)

Challenge	Yes	No	Rank
I don't know how to use			
I don't have a smart phone			
It is expensive to use			
I do not know which to use			
Others (specify)			

8. Kindly indicate whether you have used any of the following platform/s ranking them in order of preference (*where 1 represents the most preferred*).

Platform	Frequency
Facebook	
Twitter	
Whatsapp	
Blogs	
You Tube	
Wikipedia	
LinkedIn	

9. What do you **MAINLY** use social media platform for? *Tick one*

- i. Find out news and events ()
- ii. Source for agricultural information ()
- iii. Connect with friends and relatives ()
- iv. To share agricultural information ()
- v. Source for general information ()

10. How often do you use social media? Every day____ Once a week____ Once in two weeks____
Once every month____

11. What do you **MAINLY** use for accessing social media? *Tick the major one*

- i. Mobile phone ()
- ii. Laptop ()
- iii. Desktop computer ()
- iv. Tablet ()
- v. Cyber café ()

12. Are you currently using social media for accessing agricultural extension services?

YES () NO ()

13. If **NO** please give **AT MOST THREE** reasons

- i. _____
- ii. _____
- iii. _____

14. If **YES** to 13 above, when was the last time you used social media to accessing agricultural extension services?

- i. < 1 month ago
- ii. 1-3 months ago
- iii. 3-6months ago
- iv. More than 6 months ago

SECTION D: TO DOCUMENT THE EXTENT OF PERCEIVED USEFULNESS OF SOCIAL MEDIA IN AGRICULTURAL EXTENSION AMONG FARMERS AND EXTENSION SERVICE PROVIDERS

Kindly answer the following questions regarding usefulness of social media in the dissemination of agricultural information using a scale of 1-5 (*where 1= strongly disagree, 2= slightly disagree, 3= Uncertain, 4=slightly agree, 5= strongly agree*). **Tick only one answer for each question**

1. Using social media for delivery of agricultural extension services would save much time

- i. Strongly disagree ()
- ii. Slightly disagree ()
- iii. Uncertain ()
- iv. Slightly agree ()
- v. Strongly agree ()

2. Using social media for accessing agricultural extension services can reduce cost of delivering services

- i. Strongly disagree ()
- ii. Slightly disagree ()
- iii. Uncertain ()

- iv. Slightly agree ()
 - v. Strongly agree ()
3. Using social media for accessing agricultural extension services can enable wider farmer coverage
- vi. Strongly disagree ()
 - vii. Slightly disagree ()
 - viii. Uncertain ()
 - ix. Slightly agree ()
 - x. Strongly agree ()
4. Use of social media platforms can make agricultural extension easier
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()
5. Overall, to what extent do you think social media platforms would be useful in of agricultural extension?
- vi. Very low ()
 - vii. Low ()
 - viii. Uncertain ()
 - ix. High ()
 - x. Very High ()

SECTION E: TO DOCUMENT THE EXTENT OF PERCEIVED EASE OF USE OF SOCIAL MEDIA IN AGRICULTURAL EXTENSION AMONG FARMERS AND EXTENSION SERVICE PROVIDERS

Kindly answer the following questions regarding ease of use of social media in the dissemination of agricultural information using a scale of 1-5 (*where 1= strongly disagree, 2= slightly disagree, 3=Uncertain, 4= slightly agree, 5= strongly agree*). **Tick only one answer for each question**

1. I find social media platforms cumbersome to use in agricultural extension
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()
2. Learning to navigate through social media platforms is easy for me
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()

- iv. Slightly agree ()
 - v. Strongly agree ()
3. It would take a lot of effort for me to become skilful at using the social media platforms in agricultural extension
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()
4. Using social media in agricultural extension will be enjoyable
- vi. Strongly disagree ()
 - vii. Slightly disagree ()
 - viii. Uncertain ()
 - ix. Slightly agree ()
 - x. Strongly agree ()
5. Overall, I find social media platforms easy to use for delivering agricultural extension services
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()

Perceived Enjoyment

1. Social media in agricultural extension would be interesting
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()

Anxiety

1. I feel frightened about using social media for exchanging agricultural information
- i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()
2. I would hesitate to use social media platforms in fear of making mistakes I cannot correct
- i. Strongly disagree ()
 - ii. Slightly disagree ()

- iii. Uncertain ()
- iv. Slightly agree ()
- v. Strongly agree ()

Behavioral Intention (BI)

Kindly answer the following questions regarding intention to use social media for dissemination of agricultural information using a scale of 1-5 (*where 1= strongly disagree, 2= slightly disagree, 3=Uncertain, 4=slightly agree, 5= strongly agree*). **Tick only one answer for each question**

1. Assuming agricultural extension is carried out through social media platforms, I intend to use the platforms
 - i. Strongly disagree ()
 - ii. Slightly disagree ()
 - iii. Uncertain ()
 - iv. Slightly agree ()
 - v. Strongly agree ()

2. In your own opinion, do you think the following listed challenges would hinder use of social media for accessing agricultural extension services? *Kindly rate them according their importance (where 1 is the most important)*

Challenge	Yes	No	Rank
Cost of data bundles			
Cost of gadgets for accessing			
Poor internet signal			
Lack of electricity to charge gadgets			
Others (specify)			

I thank you for your assistance and taking the time to fill this questionnaire.

Anne Kimani, Cell phone: 0722965199, email: annkimani09@gmail.com.

Appendix 4: Extract of Publication in a Refereed Journal



Available Online at ESci Journals

International Journal of Agricultural Extension

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<http://www.escijournals.net/IJAE>

ASSESSING THE STATUS OF SOCIAL MEDIA FAMILIARITY AMONG SMALLHOLDER FARMERS: A CASE STUDY OF THIKA, KIAMBU KENYA

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ABSTRACT

Social media provides huge opportunities and incentives that could ease promotion of agricultural extension, facilitate real-time service delivery and enable wider farmer coverage. Ineffective dissemination approaches, expanding farmer population, low staffing, and aging agricultural extension agents continue to negatively affect the provision of agricultural extension services in Kenya. Despite the social media potential in agricultural communication, lack of awareness and low usage in the rural areas of developing countries have been documented. This study sought to establish the level of social media familiarity among smallholder rural farmers with the aim of exploring the possibility of usage in agricultural extension. The study was undertaken in Thika Sub-County of Kiambu County on 140 farmers through a researcher administered semi-structured questionnaire. Probability-proportional-to-size sampling method was employed to derive the sample size from existing extension farmer groups. Simple random sampling technique was further used to identify the actual respondents from each group. A low level of social media familiarity was established among the farmers with education, age and gender having significant influence. The study recommends awareness creation initiatives to promote social media familiarity with a particular focus on women who form the bulk of the farmers but with the lowest level of social media knowledge.

Keywords: Social media, familiarity, agricultural extension, smallholder farmers, information.

INTRODUCTION

The agricultural sector in Kenya is dominated by smallholder farmers who are concentrated in rural areas (KIPPRA, 2017). Uptake of new agricultural knowledge among farmers is low due to poor linkages between research and extension advisory services (KALRO, 2016). Low staffing, increasing farming population, physical distances to be covered as well as limited access to new information have been listed among major challenges impeding the effectiveness of extension advisory services (GoK, 2012). Wabwoba & Wakhungu, (2013) report 1:1500 as the extension to farmers' ratio in Kenya against the ideal ratio of 1:400 (GoK, 2012). Success in agriculture and rural development is attributed to the action of millions of rural families whose decisions are influenced by the information, knowledge, and technologies at their disposal (FAO, 2015). Social media, a recent addition to

ICTs is transforming the way people find news and information thus enabling the creation of informed rural communities for improved agricultural progress (Jijina & Raju, 2016). In Africa, where access to agricultural outputs generated in public research organizations is a challenge, social media has the potential to enhance the search for, distribution and sharing of the new technologies (Chisenga, Kedemi, & Sam, 2014). In Kenya for instance, a number of social media innovations including platforms like Mkulima Young, Young Farmers Market, Digital Farmers Kenya and Mkulima Hub Kenya have been developed with the aim of enhancing agricultural productivity (Kipkurgat, Onyiego, & Chemwaina, 2016). The platforms are aimed at educating and informing farmers on agricultural related matters through sharing of information links and news articles as well as making inquiries and obtaining feedback (Kipkurgat, Onyiego, & Chemwaina, 2016). In addition to the platforms mentioned above, most agricultural institutions in Kenya have incorporated social media as

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