

**USE OF SOCIAL MEDIA AS A SOURCE OF AGRICULTURAL  
INFORMATION BY SMALL HOLDER FARMERS; A CASE STUDY OF  
LOWER KABETE, KIAMBU COUNTY**

**BY**

**KURIA CATHERINE WANGU**

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## DECLARATION

This research project is my original work and has not been submitted for award of a degree in any other University.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Kuria Catherine Wangu**

**K50/69028/2011**

This research project has been submitted for examination with my approval as University Supervisor.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Mr. Edwin Nyutho**

**Supervisor**

**School of Journalism and Mass Communication,**

**University of Nairobi**

## **DEDICATION**

I dedicate this project to my parents Mr. and Mrs. Kuria who have always impressed upon me the importance of education.

## **ACKNOWLEDGEMENT**

First of all I would like to thank Almighty God my source; this far He has helped me, this far He has brought me. To God be the glory. Secondly am indebted to my family for their love, support and encouragement, am truly grateful. Special thanks to my friends who encouraged me and prayed for me, God Bless you. I would also like to thank my supervisor Mr. Edwin Nyutho for his input and insights which challenged me to do a better a job. Last but not least I would like to thank the farmers in Lower Kabete for their contribution, the staff of the Agricultural Information Resource Center and the extension officers of the Kiambu and Nairobi Counties for their cooperation.

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## ABSTRACT

Farmers, agricultural programs, agricultural institutions and non governmental institutions are utilizing web 2.0 applications and platforms to disseminate agricultural information. The study's main objective was to investigate the use of social media as a source of agricultural information with reference to farmers in Kiambu County. The specific objectives were to find out the information needs of farmers in Kiambu County; establish information seeking behavior of the farmers in Kiambu County; determine the accessibility and utilization of agricultural information from social media among farmers in Kiambu County; and examine the challenges experienced in accessing agricultural information from social media by farmers in Kiambu County. The research design used was descriptive survey so as to understand more about the phenomena. The qualitative methods that were used include interviews of key informants and a focus group of farmers who use these social media platforms. Purposive sampling was used to arrive at a sample of farmers in the study area. Both descriptive statistics and content analysis were employed in data analysis. Themes were developed as per the study objectives, and data from the various tools synthesized and triangulated. From the analysis, it can be deduced that agricultural information is highly required among a majority of farmers in the study area. The study further deduced that farmers in the study area source for agricultural information from a variety of sources, key among which include the internet, social media and extension services. From the study it can be inferred that a majority of farmers approach the use of social media in agricultural information seeking with a positive attitude, pointing to the assumption that social media is largely beneficial and convenient as a source of agricultural information. Among the most common challenges faced include poor network access, power outages, and costly charges when accessing the internet. This study recommends that centers can be established in Kiambu County whereby farmers can obtain agricultural information online and that social media should be fully utilized to provide; feedback, complement extension programs, access local and international markets and complement communication campaigns whose goal is to bring about agricultural development.

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## OPERATIONAL DEFINITIONS, ABBREVIATIONS AND ACRONYMS

- Blog:** It is a web page in which a writer can publish their opinions and allow for comments from other readers.
- Facebook:** It is an online social networking platform that has various common interest groups whereby the users share videos, links, pictures and messages.
- Internet:** It is a system of interconnected computer networks around the world.
- New Media:** It refers to on-demand access to content anytime that is accessed using digital technologies like the internet and any digital device, and allows for user feedback and participation.
- Podcast:** It is a digital audio file that is available on the internet for downloading and can be streamed online to a computer or mobile device.
- Social capital:** It is the expected collective or economic benefits derived from the preferential treatment and cooperation between individuals and groups.
- Social media:** A medium of communication that uses Web 2.0 which enhances the creation of user generated content. It includes various platforms like Face book, Twitter and You tube.
- Skype:** It is a software application that allows for free voice calls over the internet.
- Twitter:** It is an online social networking and micro blogging service that allows users to send and receive messages which are called 'tweets'.
- Users:** They are audiences of social media who generate and use the content on social media.

**Web 2.0:** They are World Wide Web technologies that allow users to interact and generate content for discussion.

**World Wide Web:** It is a system of interlinked hypertext documents accessed through the internet.

**You Tube:** It is a video sharing website whereby users upload videos and individuals and organizations can upload tutorial videos.

**CCK:** Communications Commission of Kenya

**COMESA:** Common Market for East and Southern Africa

**EAC:** East African Community

**GDP:** Gross Domestic Product

**I&C:** Information and Communication

**ICT:** Information and Communication Technologies

**ICT4D:** Information and Communication Technologies for Development.

**IT:** Information Technology

**JKUAT:** Jomo Kenyatta University of Agriculture and Technology

**KAINET:** Kenya Agricultural Information Network

**KARI:** Kenya Agricultural Research Institute

**KEFRI:** Kenya Forestry Research Institute

**RSS:** Really Simple Syndicate

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Information is necessary for educating the masses on various issues and people will look for information to meet their needs. Various mediums relay information that helps audiences to solve their problems and also influence their decisions. Communication functions in a number of ways to determine group outcome. It is a means of sharing information and it is the way group members explore and identify errors in thinking, it is a tool of persuasion (Foss & LittleJohn, 2008). According to Lievrouw and Livingstone (2006) a key theme that emerges in literature which examines interaction with content and content creators is that the 'audience' is not a passive receiver of information, but rather an active co-creator. A key characteristic of the active audience is that individuals have control over both presentation and content.

Straubaar and LaRose (1996) argue that interactivity should be used to refer to situations whereby real-time feedback is collected from the receivers of a communication channel and is used by the source to continually modify the message as it is being delivered to the receiver. The internet has been one source of information and social media platforms have not only been a source of information, but also a forum whereby users contribute to the information. According to Dennis and Merrill (2006) new media offer massive storage and users can summon up much more detail and content all customized for them with the help of browsing software and information storage and retrieval, easy accessibility and interactivity or instant feedback.

Information is critical in agricultural development because it is a tool for communication between stakeholders and serves as a channel for assessing trends and shaping decisions (Kalusopa, 2005). Farming requires information and technical expertise hence the need for extension services however, due to various factors extension services are not readily available to all farmers. A consensus exists that extension services, if functioning effectively, improve agricultural productivity by providing farmers with information that helps them to optimize their use of limited resources (Muyanga & Jayne, 2006). They further state that the costs to the nation of having an underperforming extension service in terms of smallholder productivity, incomes and poverty reduction and the ability to survive or even thrive after the reduction in import tariffs as implied by impending COMESA and EAC trade agreements are very high.

Republic of Kenya (2004 & 2005c) as quoted in Muyanga and Jayne(2006) state that the current extension system has been described as ineffective and inadequate and is considered key among the main cause of the poor agricultural performance of the agricultural sector. Smallholder farmers not only require relevant advice to increase farm productivity, but need extension on a diverse range of rural development options including information on markets, value addition and other income opportunities too. An extension system that is not in touch with farmers and does not significantly contribute to improving the lives of its clientele is now considered irrelevant (Muyanga & Jayne, 2006) They further state that there is also concern about the extension messages they propagate, levels of training of their personnel, and whether these private extension systems adequately reach small and poor farmers in remote areas.

According to Alila and Atieno (2006) marketing of agricultural produce and dissemination of information is crucial for agricultural development. Poor marketing facilities and institutions are some of the constraints to increased agricultural production. The major marketing constraints comprise high transportation costs due to dilapidated roads, improper handling, poor storage facilities and wastage. They further suggest that promoting marketing of agricultural produce will require that some infrastructure be developed; and that the government provides all-weather rural access roads, improved communication facilities and market information systems.

### **1.1.1 The concept of social media**

The internet has impacted communication. It has been considered as an archive for information whereby people can obtain information. According to Dennis and Merrill (2006) the internet is a marvel because according to findings its users rose from under 10% of the adult population in 1995 to an estimated 66.5% in 2004 or some 218 million Americans. Most people use the internet for personal communication through email, e-commerce and access to information. The internet and the World Wide Web are a remarkable invention that allows access to an almost infinite storage of information. After initial skepticism some leaders of media industries proclaimed the internet to be the universal information highway and were bullish on its development. They imagined the benefits of interactivity as an unparalleled platform for delivering their content (whether information, entertainment, opinion or advertising) almost effortless and without the costs associated with printing and broadcasting. The new media would be interactive, with instant feedback from consumers as well as a constantly updated treasure trove of information (Dennis & Merrill, 2006).



Social media is a one stop shop for information whereby the users can read and also contribute to the content. It is convenient to those who need information instantly or do not have easy access to information. Social media is a collection of online technologies that allow users to share insights, experiences and opinions with one another. The sharing can be in the form of text, audio, video or multimedia (Safko & Brake, 2009). Tang, Gu & Whinston (2012) state that the benefits of participating in social media have gone beyond social sharing to building reputations and bringing in career opportunities and monetary income. According to Kietzman, Hermkens, McCarthy and Silvestre (2011) social media platforms focuses on some or all seven building blocks that is; identity, sharing, conversations, relationships, presence, groups and reputation. Different social media activities are defined by the extent to which they focus on some or all of these blocks. Social media provides opportunities for companies to interact with their publics in real time. This is important because feedback enables companies to make quick decisions. Social media is also cheaper in the long run. According to Kiertzman et al. (2011) due to mobile and web based technologies social media creates highly interactive platforms through which individuals and communities share, co-create, discuss and modify user-generated content. It introduces substantial and pervasive changes to communication between organizations, communities and individuals.

Social media has revolutionized communication whereby it has managed to surpass traditional gatekeepers in traditional media that is editors and other decision makers who set the agenda. Nevertheless social media has not overthrown traditional media and is complementing traditional media in agenda setting. Traditional media has been the main medium for companies to reach their audiences and there has been a great

deal of control which is avoided on social media. Social media is dominated by user generated content. Social media is an evolutionary stimulus because users not organizations or the traditional news media now control the creation and distribution of information. Users bypass the traditional information gatekeepers (Coombs, 2012). The traditional mass media have attempted to reach as many readers and viewers as possible joined with more targeted new media players who sought a particular segment of the population, including those with quite specialized interests anywhere in the world. (Dennis & Merrill, 2006)

Old media are largely geographic, aimed at people in particular physical places, whereas new media are demographic, seeking clusters of like-minded individuals with similar interests and passions, much like specialized magazines but with broader reach and genuine interactivity (Dennis & Merrill, 2006). Social media has allowed for the crossing of boundaries whereby people of different geographical regions locally and internationally have been able to exchange ideas on various forums. This has allowed for necessary conversations to take place. This has had its advantages but disadvantages too. Following the 2007/2008 dispute of the Kenyan election, various conversations with tribal undertones took place on social media. However on the same platforms there were calls for peace. Makinen and Kuiru (2008) as quoted by Odero (2013) state that social media was an alternative media for citizen communication but it was also used as a channel for biased information, tribal prejudices and hate speech.

### **1.1.2 Agriculture in Kenya**

Agriculture has been termed as the backbone of Kenya's economy. According to the Food Security Report by the Kenya Agricultural Research Institute (KARI) agriculture contributes 24% of the GDP approximately 45% of the government revenue is derived from agriculture and the sector contributes over 75% of industrial raw materials and more than 50% of the export earnings. The sector is the largest employer in the economy accounting for 60% of the total employment. Growth in the sector is therefore likely to have a greater impact on a larger section of the population than any other sector.

There are many factors affecting the development of agriculture in Kenya like the infrastructure. Poor infrastructure including poor rural roads, markets and transport systems that result in high transaction costs for farmers and inaccessibility to input and output markets are among the main concerns of the sector (Alila &Atieno, 2006). Alila and Atieno (2006) further state that agriculture has over the years contributed more than proportionately to GDP growth in comparison to other sectors. This has been partly due to infrastructure established through efforts made for specific commodities which include provision and maintenance of rural access roads to facilitate the movement of agricultural products to markets, establishment of agro-based industries to increase the value of agricultural produce, education, training and extension services to enhance the adoption of modern farming techniques and the establishment of local markets to open up markets for farmer's produce.

### **1.1.3 Agriculture in Kiambu County**

Kiambu County has twelve constituencies which are Ruiru, Kikuyu, Lari, Kabete, Thika Town, Juja, Kiambu Town, Kiambaa, Githunguri, Limuru, Gatundu South and Gatundu North. The County is characterized by fertile soils and plenty of rainfall. There are numerous high potential small holder farms, which have the potential to meet the County's demand and also supply neighboring Counties like Nairobi, Kitui and Kajiado with dairy products, green vegetables and fresh fruit. Kiambu's horticultural products include; coffee and tea which contribute a lot to Kenya's foreign earnings. The types of value added agribusinesses include; horticulture, dairy farming, tanneries, Kiambu branded coffee and fish production.

### **1.1.4 Social Media and Agriculture in Kenya**

Users of social media have access to platforms like Mkulima Young, Young Farmers Market, Digital Farmers Kenya and Mkulima Hub Kenya. Farmers and those interested in farming obtain information from these social media platforms. These platforms educate and inform on agricultural matters as well as facilitating the buying and selling of agricultural produce and related products. The users exchange information and discuss issues concerning agriculture based on experience and knowledge. They also buy and sell agricultural produce and inputs and use pictures, links and videos to facilitate this. This sharing of information facilitates the marketing of the farmers produce and formation of networks. The social media platforms are also used to share links, news articles, information, feedback and for queries.

Agricultural institutions in Kenya have also incorporated social media in their information system. For instance the Agricultural Information Resource Center has Facebook and YouTube platforms and a blog. However not all institutions have fully embraced Web 2.0 as a tool for disseminating information. A 2012 report by CIARD states that the use of Web 2.0 to enhance visibility and exchange of research outputs, including metadata, has not been widely embraced for sharing research outputs. KARI and KAINet websites make use of the RSS feed on their websites. The KEFRI website has integrated RSS feed, but the site is not yet publicly available. The MoA (Ministry of Agriculture) KARI and JKUAT use YouTube to disseminate videos about events at their institutions. At individual level, there were isolated cases of use of tools such as Facebook, blogs, and Skype by researchers. However, it could not be established if such tools were being used to share research information.

It is also evident that there is convergence of traditional media and social media to provide and shape content. Agricultural programs are using social media to engage audiences and obtain feedback. For example programs like Shamba Shape Up on Citizen Television and the pull out seeds of gold, in the Saturday Nation have social media platforms. Mkulima Young a radio program on Coro Fm also obtains its feedback on the Mkulima Young social media platforms.

## **1.2 Problem Statement**

Most farmers access information from extension workers, libraries or websites. The number of extension workers has been decreasing while farmer numbers have been increasing; hence the need for innovative services to address this gap (Gakuru et al., 2009). The agriculture sector in developing countries is becoming increasingly

knowledge intensive. Researchers at the global, regional, and national levels continue to generate new information. As agriculture systems become more complex, farmers' access to reliable, timely and relevant information sources becomes more critical to their competitiveness. Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a way preferred by them (Diekmann, Loibl & Batte, 2009).

Farmers constantly manage and adapt their farm businesses in order to remain competitive in a changing world. This is done by among other ways, fine tuning existing practices and technologies or by adopting innovations, such as novel products, technologies or practices. Where there are a number of alternatives, it is necessary for the farmer to choose which innovation, or suite of innovations, will provide the most benefit and best meet the needs of the farm business (Hill, 2009). Kaine (2004) explains that this process is highly involving or important to the farmer as it usually has significant implications for the farm business. Therefore, when making an important decision the farmer will devote time and effort to collecting information, considering the alternatives and selecting the best option, in order to minimize the risk of "getting it wrong". This process is known as complex decision making (Assael, 1998).

Complex decision making requires the collection of a range of information from a number of sources (Bystrom & Jarvelin, 1995). As individuals, farmers have their favored information sources (Vergot et al., 2005), which they use depending on the specific information being sought (Solano et al., 2003). De Silva and Ratnadikwara (2008) state that a two-way process enables farmers to share lessons and best

practices related to their farm enterprise, thus incorporating their knowledge base as well. Social media is increasingly being used as a medium of sharing information and creating awareness. Platforms like Facebook, Twitter, YouTube and blogs have been used to engage with various audiences. The users generate and shape the content. Social media strengths are complementing traditional media in facilitating the shaping of content. Social media is accessed using ICT channels like mobile phones and computers.

Agricultural studies have largely examined how farmers source general information (Vergot et al., 2005, Villamil et al., 2008). Rehmann (2011) and Hassan, Shaffril, Samah, Ali & Ramli (2010) have researched on the media as a source of agricultural information while Rhodes & Aue (2010) have done a research on adoption of social media by agriculture editors and broadcasters. Aina (2006); Stefane et al, (2005); Kaniki (1991), have analyzed farmer information sources and information needs. Studies like Halakatti, Gowda, and Natikar (2010) Meitei and Devi (2009) have shown that radio, television and print media have been the main sources of information among farmers however social media as a source of information has not been explored much.

There is less local literature on the same, presenting a knowledge gap, which this study intends to address. The purpose of this paper is to establish the information needs, information seeking behaviour, accessibility and utilization of agricultural information and the challenges experienced in accessing agricultural information from social media by farmers in Kiambu County.

### **1.3 Study objectives**

#### **1.3.1 General objective**

To investigate the use of social media as a source of agricultural information with reference to farmers in Kiambu County.

#### **1.3.2 Specific objectives**

- i. To find out the information needs of farmers in Kiambu County.
- ii. To establish information seeking behavior of the farmers in Kiambu County.
- iii. To determine the accessibility and utilization of agricultural information from social media among farmers in Kiambu County.
- iv. To examine the challenges experienced in accessing agricultural information from social media by farmers in Kiambu County.

### **1.4 Research Questions**

- i. What are the information needs of farmers in Kiambu County?
- ii. What is the information seeking behavior among farmers in Kiambu County?
- iii. How is the accessibility and utilization of agricultural information from social media among farmers in Kiambu County?
- iv. What are the challenges experienced in accessing agricultural information from social media by farmers in Kiambu County.



### **1.5 Justifications of the study**

This study is important because social media as a medium is being used as a tool for informing, educating and persuading the masses alongside traditional mediums. Hence this paper seeks to find out how effective social media is in communicating to small holder farmers and how this can bring about development in the agriculture sector. The study is also necessary in order to understand the efficiency of social media platforms in communicating to its target audience. It will be useful to researchers, scholars and organizations who are interested in understanding the efficiency of social media as a medium of communication.

### **1.6 Scope and limitations of the study**

The study will be carried out in Kiambu County whereby a focus group of farmers will be engaged, interviews of key informants from the Ministry of Agriculture and the Agricultural Information Resource Center and a survey will be carried out. The study will be limited to farmers in Kiambu County due to financial and time constraints.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter is a critical examination of literature from journals, books and research studies pertinent to the area of study with regard to the variables and themes related to the study.

#### **2.2 Farmer agricultural information needs**

The factors that influence farmers' information needs or sources are rarely explored (Babu, Glendenning, Okyere & Govindarajan, 2012). An information needs assessment should act as an initial guide to developing programs, so that contextually appropriate content is generated (Chapman & Slaymaker 2002; Roman & Colle 2003). Stiglitz (2000) posits that only limited progress has been made in understanding how societies and communities such as farmer groups absorb and adapt to using new information. He also states that further advances will be made in understanding how different organizational designs will influence the nature of information generation, transmission, absorption, and use.

Farmers have an inevitable need for various types of information to be effective in farming. The information concerning improved agro-technologies generated by agricultural scientists and researchers must be disseminated in ways that are compatible with the needs of farmers and result in the satisfaction of end users of that information (Hassan, 1997). Studies by FAO (2004) and IFPRI (2004) concur that the future of food security in the developing world is increasingly becoming dependent

more on information and knowledge than inputs. Bonjesi (2004) states that the sustainability of subsistence farming or food crop production is hampered in Zimbabwe due to various factors such as lack of inputs and chiefly, lack of access to information and knowledge resources by women, who are apparently the major players. Rural communities require information inter alia on supply of inputs, new technologies, early warning systems (drought, pests, and diseases), credit, market prices and their competitors.

Agricultural information is necessary to reach farmers and agriculturists in order to meet their needs. If farmers for example have access to relevant agricultural information, food shortages may be eradicated. Such information is crucial to their farming activities and impact on household food security (Gundu, 2009). Understanding farmers' information needs helps in designing appropriate policies, programs, and organizational innovations. Information needs assessments give program designers the ability to develop interventions that target users with specific information needs (Babu et al., 2012). The consideration of users' information needs is very vital in the provision of need-based and relevant information to them (Anwar & Supaat, 1998).

According to Shaik et al. (2004) agricultural extension systems in most developing countries are under-funded and have had mixed effects. Much of the extension information has been found to be out of date, irrelevant and not applicable to small farmers' needs, leaving such farmers with very little information or resources to improve their productivity. Information is an important resource for agriculture and

rural development and communicating information is a major function of extension aimed at the promotion of agricultural development (Sanusi, 2010).

Access to and use of current information is critical, not only for the financial success of farmers, but to support sustainable agricultural systems. Yet, farmers are rarely consulted about their needs and preferences before the design of extension services. Therefore by understanding how farmers access and use agricultural information, their agricultural information needs, and the factors that influence their information search behavior, programs disseminating agricultural information could better target farmers (Babu et al., 2012).

Targeting smallholder farmers with low agricultural incomes is important, as they search for less information. These farmers may lack motivation and interest in agriculture, so improving the timely delivery and reliability of information could encourage them to improve their information search strategies and consequently have important farm outcomes (Babu et al., 2012). The basic information needs for farmers are market information prices, weather forecasts, transport facilities and information on storage facilities. This first type of data is, although vital and of concern to the farmer, quickly outdated and changes constantly. The second level of information needed is about crop and cattle diseases, fertilizers. The third level is more context and local specific and requires the direct interface between the extension worker and the farmer (Gakuru et al., 2009).

According to Gakuru et al. (2009) agricultural informatics is a new concept that has arisen following the rapid development in ICT and the internet. Referred to as e-agriculture, agricultural informatics is an emerging field which combines the advances in agricultural informatics, agricultural development and entrepreneurship to provide better agricultural services, enhanced technology dissemination, and information delivery through the advances in ICT and the internet. The e-Agriculture concept, however, goes beyond technology, to the integration of knowledge and culture, aimed at improving communication and learning processes among relevant actors in agriculture at different levels that is locally, regionally and globally.

The value of an information needs assessment, by engaging directly with users of information, should not be overlooked (Babu et al., 2012). National ministries of agriculture have attempted to integrate ICTs into information delivery (Gakuru et al., 2009, Aker, 2010). The main focus of ICT in agriculture is meeting the farmers' needs for information (Shaik et al., 2004). Throughout Africa, ICTs have become increasingly integrated into information disseminated to farmers for decades, traditional forms of ICTs have become more prevalent in advisory service provision whereby radio and television programmes feature agricultural information (Gakuru et al., 2009).

### **2.3 Farmer information seeking behavior**

Mbugua (2012) states that farmer's preference in information dissemination pathways and media is important in determining adoption of technologies and productivity. Farmers are clearly not a homogenous group, and understanding the specific factors that influence their information source selection, access, and use is a first step toward

better targeting of extension programs and advisory services that facilitate information sharing. However, a majority of published literature that examines the factors that affect farmers' information search behaviors, and the factors that influence farmers' use of different information sources, comes from studies in developed countries (Babu et al., 2012).

Social capital can play a role in farmers' information search behaviour. Progressive farmers, for example, could have a higher propensity to invest in accumulating social capital by joining farmers' clubs and associations, which may enhance their access to current information. Farmers' interactions with other farmers, private input dealers, and extension workers, and long-standing relationships with government officials, can be captured by their level of social capital. Understanding the factors affecting social capital formation—such as individual characteristics of farmers and their investments in developing and nurturing relationships—could be helpful in understanding farmers' information-seeking behavior (Babu et al., 2012).

The context of information search also determines the search behavior and the information needs of the farmers (Wilson, 2006). This context includes triggers during the cropping or production season, such as pest incidence, a shortage of rainfall, or falling prices in the community. The information search behavior is also conditioned by a farmer's aspiration for information search and the capacity of the farmer to accumulate social capital and social learning skills. The content needed and the sources of information will further refine the search behavior (Babu et al., 2012).

Studies by Diekmann, Loibl, and Batte (2009) showed that farmers' attitudes toward information search, farm sales, years farming, internet access, and farm type were good predictors of their information search strategies. Those farmers with more self-confidence about making decisions tended to have higher information search behavior. These findings demonstrate that different groups have different needs that need to be understood. According to a study done by Babu et al. (2012) on the information search behavior of farmers in Southern India the main sources of the low searchers were interpersonal—the input dealer, the state department of agriculture extension staff, family, and progressive farmers. The main sources farmers relied on for agricultural information in 2010 was the private input dealer (68.6 percent), followed by the state government's department of agriculture extension staff (51.2 percent), television (43.6 percent), family members or relatives (39.9 percent), progressive farmers (36.2 percent), PACBs (35.7 percent), and newspapers (30.6 percent). Farm magazines were accessed by 9.2 percent. Only a small percentage used radio (5.4 percent) and farmer group associations (4.7 percent) for information.

Increases in the productivity of smallholder agriculture crucially depend on information related to production, processing, and markets, identifying farmers' sources of information and search behavior becomes important (Babu et al., 2012). According to Gakuru et al. (2009) initiatives like the National Farmers Information Service (NAFIS) which is voice based and INFONET which is web based have been developed. Seeking information from these and other platforms becomes an onerous task for the farmers as it entails ploughing through many publications or surfing a large number of web-pages. Furthermore, for the illiterate farmer this becomes impossible right from the onset. Web-based solutions also bring challenges because

internet infrastructure in Africa is still very sparse. Nevertheless, these are very useful resources and all that is needed is to provide an easy way for the farmers to navigate them.

Gakuru et al. (2009) suggest that with the widespread use of mobile phones, voice and SMS solutions should find more use as they offer easy accessibility. However they point out that they may have some challenges as the SMS carries only a limited amount of information and requires a basic level of literacy. Voice-based solutions are also complicated to develop as they require machines to produce natural speech or good speech synthesis. They also do not offer detailed information such as pictorial illustrations as in web solutions.

#### **2.4 Accessibility and utilization of agricultural information among farmers**

Socio economic circumstances and ranking of agricultural problems play a major role in the type of development intervention preferred (Babu et al., 2012). As increases in the productivity of smallholder agriculture crucially depend on information related to production, processing, and markets, identifying farmers' sources of information and search behavior becomes important. The provision and targeted delivery of agricultural information to small and marginal farmers remain a challenge in extension programs (Swanson 2008; Swanson & Rajalahti 2010). Farmers are not a homogenous group they have different needs. An analysis of the Indian NSSO 2003 survey showed that small and marginal farmers accessed less information, and from fewer sources, than medium and large-scale farmers (Adhiguru, Birthal & Kumar, 2009). Villamil, Silvis, and Bollero (2008) found a high degree of variability in preferences for methods of information delivery among farmers, even in small



geographic areas and suggested segmenting the population into target groups to increase the efficiency of knowledge communication through each group's preferred information channels.

Agricultural information is not readily available to all farmers due to various factors. The level of information search in terms of global, national and local information sources will depend on the aspirations of the searcher. Further farmer's ability to search for information depends on the sources that are accessible to farmers. For example, local information needs could be met by a well-organized extension system that uses traditional and modern methods of communication such as television, radio, and mobile phones, while the need for global information has to be met through internet connections or through contact with private firms (Babu et al., 2012). To access, assess, and apply the content, users must have economic resources, including money, skills, and technology, and social resources, such as motivation, trust, confidence and knowledge (Heeks, 2005).

According to Maru (2008) as quoted by (Mburu, 2013) due to the advent use of new ICT especially computers, the internet and cellular telephony, there is an ongoing transformation of agriculture through innovation that is largely enabled through information sharing and exchange between agricultural communities. However Xiaolan (2011) as quoted by (Mburu, 2013) argues that the digital divide is not merely a problem of access to ICT, it is part of a larger developmental problem in which vast sections of the world's population are deprived of the capabilities necessary to use ICTs, acquire information and convert it into useful knowledge.

Extension services can be made available using various ICT channels. Broad basing agricultural extension activities; developing farming system research and extension; having location-specific modules of research and extension; promoting market extension, sustainable agricultural development, participatory research, etc. are some of the numerous areas where ICT can play an important role (Shaik et al., 2004). They further state that IT can help by enabling extension workers to gather, store, retrieve and disseminate a broad range of information needed by farmers, thus transforming them from extension workers into knowledge workers. The emergence of such knowledge workers will result in the realization of the much talked about bottom-up, demand driven technology generation, assessment, refinement and transfer. However, Gakuru et al. (2009) states that web-based solutions also bring challenges because internet infrastructure in Africa is still very sparse. Nevertheless, these are very useful resources and all that is needed is to provide an easy way for the farmers to navigate them.

The principal challenge confronting governments and the international development community is to ensure that smallholder farmers benefit from commercialization in agriculture by participating in the market. Increased commercialization shifts farm households away from traditional self-sufficiency goals and toward profit and income-oriented decision-making (Gakuru et al., 2009). They further state that interventions aimed at reducing transaction costs would encourage increased farmer participation in competitive markets to meet the broader poverty reduction objectives. In economic terms, the role of agricultural informatics is to reduce the information search costs in the agriculture value chain and to link the decision to grow with that of to sell. The final objective is reducing total transaction costs to increase the incentives

for smallholder farmers to participate in commercial agriculture as opposed to being stuck in subsistence farming.

According to the Academy for Educational Development AED (2003) knowledge is a significant factor of production .Chapman and Slaymaker (2002) suggest that the relative impact of improved I&C on livelihoods is arguably greater in remote rural areas. According to Proenza (2002) ICTs offer an unprecedented set of tools; an opportunity for a win-win situation that make the provision of information and knowledge services and the opening of opportunities for the poor less costly to achieve than ever before. It is nevertheless an opportunity that needs to be seized and built upon. Some studies have shown that farmers who have access to information technology are more likely to participate in agricultural and rural development programs and other political, social, and cultural practices (Anastasios, Koutsouris & Konstadinos, 2010).

Heeks et al. (2002) posit that in order for this development to happen there is a need to move away from concepts of ‘e-development’ which place ICTs at the centre stage, towards ‘i-development’ through an approach which is information centered, integral to its environment, integrated within development objectives, intermediated, interconnected and indigenised. The reaping potential benefits will depend on long-term commitment to investing in this area combined with careful attention to issues of sustainability and capacity building. ICT helps the extension system in re-orienting itself towards the overall agricultural development of small production systems. With the appropriate knowledge, small-scale producers can even have a competitive edge over larger operations (Shaik et al., 2004).

Information maybe readily accessible but due to other constraints the receivers are unable to use it. Individuals must be able to not only access that content, assess its relevance and apply it to a specific decision, but ultimately to act upon the information. This requires further resources at the user level, including action resources and capacity content that may be available to a community, but it may not be accessed because of for instance, low levels of literacy, or it may be accessed but not acted upon because of poor financial capacity to buy the necessary inputs (Babu et al., 2012). Coudel and Tonneau (2010) concur and state that information may seem appropriate, usable, relevant, but it can only be useful if the actors have the capacity to use it and if their environment offers them the opportunity to use it.

According to Shaik et al. (2004) when knowledge is harnessed by strong organisations of small producers, strategic planning can be used to provide members with least-cost inputs, better storage facilities, improved transportation links and collective negotiations with buyers. ICT can also play an important role in bringing about sustainable agricultural development when used to document both organic and traditional cultivation practices. They further suggest that to harness the power of the new technologies, people working on ICT projects for agricultural and rural development need to be competent. In fact, the success of any ICT project will depend largely upon the orientation and sensitivity of the people who control the power of ICT to serve the needs of rural people.

## **2.5 Challenges experienced in accessing agricultural information**

Inappropriate or poor-quality information could be a hindrance to farmers' use of information sources. The major constraints to information access are poor availability, poor reliability, a lack of awareness of information sources available and untimely provision of information. To improve extension coverage, sources like the state department of agriculture, the agricultural cooperative banks, newspapers, and television could be targeted as appropriate sources for delivery of information. The current challenge, however, is to provide relevant, appropriate, and contextualized content for various agro ecological zones. Further research is needed to explore the organizational performance challenges in the extension system that is restricting the timely delivery, appropriate availability, and reliability of information for farmers (Babu et al., 2012).

Smallholder farmers usually experience challenges in obtaining agricultural information due to lack of infrastructure. There have been shortcomings of traditional print and library materials of providing agricultural information to rural farmers who are generally illiterate and relatively remote from formal sources of information like extension stations and libraries (Van & Fortier, 2000). Where rural farmers are not faced with challenges in accessing agricultural information, traditional media such as radio has been used in delivering agricultural messages to rural farmers (Munyua, 2000). ICTs are increasingly highlighted as a valuable and efficient way of providing information to farmers (Richardson, 2006a).

The lack of computer skills can also be a limitation to small holder farmers. The digital divide is traditionally thought of as describing the difference in the kinds of information and communication technologies to which people have access (Norris, 2001). Understanding the digital divide is crucial to understanding the role of the internet in contemporary social development. The digital divide that affects the urban poor, the elderly and the poorly educated is also due to limited internet access and digital illiteracy. Those with higher education and higher incomes are more likely to own computers, allowing more time to develop technical skills (Howard, Busch & Sheets, 2010).

However (CCK, 2014) reports that the continued technological advancements have created opportunities that have encouraged progression of data/internet access in the country. Notably, mobile data/internet sector has maintained its largest share of 99 percent of total internet subscriptions which could be as a result of factors such as the development of 3G network, social networking among others. A study conducted in Kenya to find out the households' perspective on the development outcomes of internet usage and mobile phones indicated that internet access and usage was limited and restricted to urban areas while mobile phones were distributed across the country (Ndung'u & Waema, 2011). Studies in India by Babu et al. (2012) revealed that internet and mobile phones are currently underutilized to access information in the study districts. Despite high mobile phone ownership, access to information via mobile phone is low. Access to the internet on mobile phones is growing at the expense of the public access routes in Kenya. Rural internet access and usage is more driven by mobile phones compared to urban areas. An estimated 47 percent of rural

internet access is through the mobile phone as compared to 39 percent of urban internet access (Synovate, 2009).

According to a study done by (Mburu, 2013) unfavorable airtime was reported as a major setback by respondents who listen to the radio and those who watch television. Other respondents reported use of difficult terminologies as a hindrance especially where the computer and the mobile phone are used to access information. Other factors like lack of storage devices for some ICT devices and lack of training of use of computers were reported as a hindrance. Some of the respondents encountered the problem of time consumed by charging the battery for use in the radio and mobile phone. Information explosion was a problem faced by respondents who surf the internet through the computer and the mobile phone. All the respondents accessing information through radio, television and the computer reported power blackout as a hindrance. The cost to buy and to surf the internet was reported by a majority of respondents followed by purchase of the television. The mobile phone was reported by some respondents as being costly to run due to the high cost of credit. All the respondents felt radio was the cheapest in its operations as compared to the other channels.

## **2.6 Social Media and Agriculture**

Social media overcomes geographical boundaries and creates communities who share common interests. The users also seek out information from traditional media social media platforms. Rhoades and Hall (2007) noted that there was a large presence of blogs covering topics on agriculture. Many of the blogs were formally written however a vast majority were not media related. Agriculture media is beginning to

understand this phenomenon and utilize Web 2.0 technologies for their audiences. Therefore, it is important to look at each of these Web 2.0 applications. It is also important to understand how audiences would like their information presented to them in this fast-paced society (Rhoades & Aue, 2010). They argue that research should be done with audiences to see how much they want or do not want their agricultural information using the web 2.0 technologies.

According to findings by Cline (2011) respondents allocate a large portion of their time to social media sites for agricultural purposes and were participatory in ‘agvocacy’ process via social media. Respondents prefer twitter to gather and disseminate agricultural information. ‘Agvocates’ view twitter as not only a sharing place for agricultural news but also a sharing place for advice and opinions.

According to findings by Ruth and Lundy (2004) newspapers would be the best form of communication to receive information on agriculture followed by television, government agencies and radio. According to Hall and Rhoades (2009) studies of audiences in rural America noted that farmers still preferred face to face communication over online communication. However according to Fannin (2006) as quoted by Rhoades and Aue (2010), with the decline of farm radio and media, rural markets have been left without agriculture news podcasting is a new method of audio news distribution, it bypasses traditional radio media outlets to reach agricultural producers and general news consumers.



Further studies should look at other agricultural media professionals to compare these findings with other groups. Technology will continue to grow and change, and for agriculture to stay in the forefront of sharing with a non-agricultural public, they must be ready to embrace each new tool as it comes down the wire (Rhoades & Aue, 2010).

**Table 2.1: Findings of a Research by Rhoades & Aue (2010)**

<i>How audiences reach out to agricultural f</i>	<i>f</i>	<i>N</i>
<i>media</i>		
Email	93.6%	73
Telephone Calls	88.5%	69
Letters	56.4%	44
Social networking wall posts	38.5%	30
Websites	33.3%	26
Blog Comments	9.0%	7
Blogs	2.6%	2
Video Comments	1.3%	1

When asked how their audiences are currently contacting them, participants indicated that email (93.6%, n=73) and telephone calls (n=88.6%, n=44) are the most popular. However, very few individuals from their audiences use blogs (2.6%, n=2) or video comments (1.3%, n=1) to reach out to them (Rhoades & Aue, 2010).

## **2.7 Theoretical framework**

This section reviews theories pertinent to the study of the use of social media as a source of agricultural information. Theoretical orientation is a collection of existing theories that is, theories organize knowledge and isolated findings from different research studies into powerful explanatory framework and models from literature or professional hunch which underpin conceptual framework and subsequently inform the problem statement (Mugenda, 2003). The study thus hereby reviews the uses and gratifications theory and the transactional model of communication.

### **2.7.1 Uses and gratifications theory**

Tan (1984) states that media use is goal directed. The mass media is used to satisfy specific needs. These needs develop out of the social environment. He further states that receivers select the types of media and media contents to fulfill their needs. Thus, the audience initiates the mass communication process and are able to 'bend the media' to their needs more readily than the media can overpower them. The uses and gratifications theory was advanced by theorists Elihu Katz, Jay G. Blumler and Michael Gureitch in 1974. The theory holds that people actively seek out specific media and specific content to generate specific gratifications (Turner & West, 2010). Theorists in uses and gratifications view people as active because they are able to examine and evaluate various types of media to accomplish communication goals (Wang et al., 2008). Uses and gratification links need gratification to a specific medium choice that rests with the audience member. Because people are active agents, they take initiative (Turner & West, 2010).

‘The main question in media uses and gratifications research is not how the media are changing our attitudes and behaviors but how the media are meeting our social and individual needs. Thus the emphasis is on an active audience, deliberately using the media to achieve specific goals’ (Tan, 1984, p233). Papacharissi and Rubin (2000) found that people had five primary motives for internet use and the most important was information seeking. In addition they found that people who felt valued interpersonally used the internet primarily for information gathering. They concluded that the uses and gratifications theory provided an important framework for studying new media. According to Dimmick, Chen and Li (2004) although the internet is a relatively new medium, it overlaps the traditional media in terms of uses and gratifications. Kaye and Johnson (2004) observe that the growth of the internet ‘has produced a renaissance in the uses and gratifications tradition as scholars are increasingly interested in going beyond discovering who uses the internet to examine why they use this new medium’ (p197)

Leung and Wei (1998) applied uses and gratification to new technology. As explained by Shanahan and Morgan (1999) they state that there is an underlying consistency of the content of the messages we consume and the nature of the symbolic environment in which we live even if the technology changes. Shanahan and Morgan (1999) argue that new technologies have always developed by adopting the message content from the technology that was previously dominant.

### **2.7.2 Transactional Model of Communication**

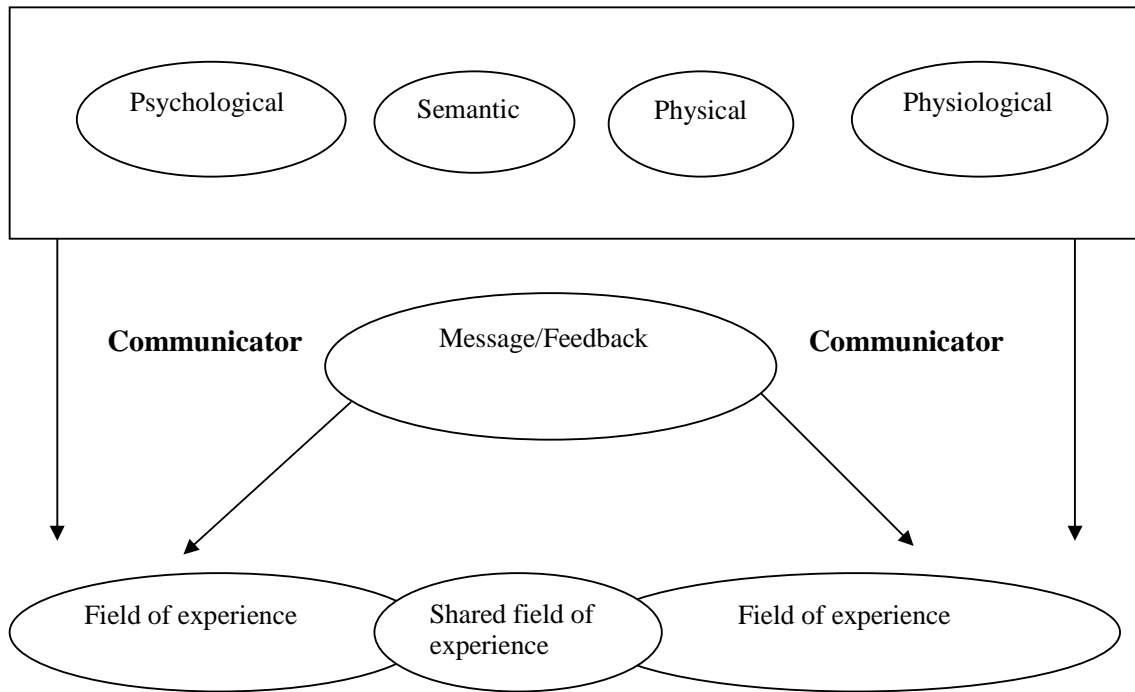
Brazilian adult educator Paulo Freire original literacy work in the 1950's empowered peasant farmers. Central to this line of thinking there was an emphasis on letting the stakeholders get involved in the development process and determine the outcome rather than external actors imposing the outcome. From the outset, the focus of participatory communication was on dialogical communication rather than on linear communication. The emphasis was on participatory and collective processes, in research, problem identification, decision- making, implementation and evaluation of change (Tuftte & Mefalopulos, 2009). Participatory communication is transactional based; the users of social media are stakeholders in the shaping of information messages. Today, farmers share their knowledge with other farmers based on experience not only by face to face communication but also online conversations.

Gilder (1994) predicted on future technology a hybrid of the television and the computer. *'Rather than exalting mass culture, the teleputer will enhance individualism. Rather than cultivating passivity, the teleputer will promote creativity. Instead of master-slave architecture, the teleputer will have an interactive architecture in which every receiver can function as a processor and transmitter of video images and other information. The teleputer will usher in a culture compatible with the immense powers of today's ascendant technology. Perhaps most important, the teleputer will enrich and strengthen democracy and capitalism around the world'* (p46) Web 2.0 applications and platforms are based on the transactional model of communication whereby communities for instance farmers create and shape their own content that is beneficial to them.

Communication is a dynamic process. 'Communication is like a motion picture, not a single snapshot. A word or action does not stay frozen when you communicate; it is immediately replaced with yet another word or action' (Samovar, Portier & McDaniel, 2006). The premise of the transactional model of communication is that the sender and the receiver are involved in the process of encoding and decoding messages and interact hence the element of feedback therefore the sender also becomes the receiver. According to Tan (1984) a transactional model of communication has elements of Shannon and Weaver's mathematical model, Newcomb's social psychological model and Westley and Maclean's general model. Communication is initiated deliberately by a source to achieve some effect (response) in the receiver. Observation of different forms of mass communication can show that mass communication is certainly purposive.

According to Turner and West (2010) communication as transactional means that the process is cooperative; the sender and the receiver are mutually responsible for the effect and the effectiveness of communication. They further state that in the transactional model, people build shared meaning. In addition, what people say during a transaction is greatly influenced by their past experience. The distinction between source and receiver is arbitrary since both are actively involved in the transaction. The original source may affect the receiver, but receivers also often affect sources (Tan, 1984). Transactional communication requires us to recognize the influence of one message on another. One message builds on the previous message; therefore, there is interdependency between and among the components of communication. A change in one causes a change in another (Turner & West, 2010). The sharing of a common reality gives people within a particular culture a common fund of knowledge

(Samovar, Portier & Mc Daniel, 2010). Shared knowledge gives rise to shared meanings which are carried in the shared physical environment, social institutions, social practices, the language, conversation scripts and other media (Chiu & Hong, 2006).

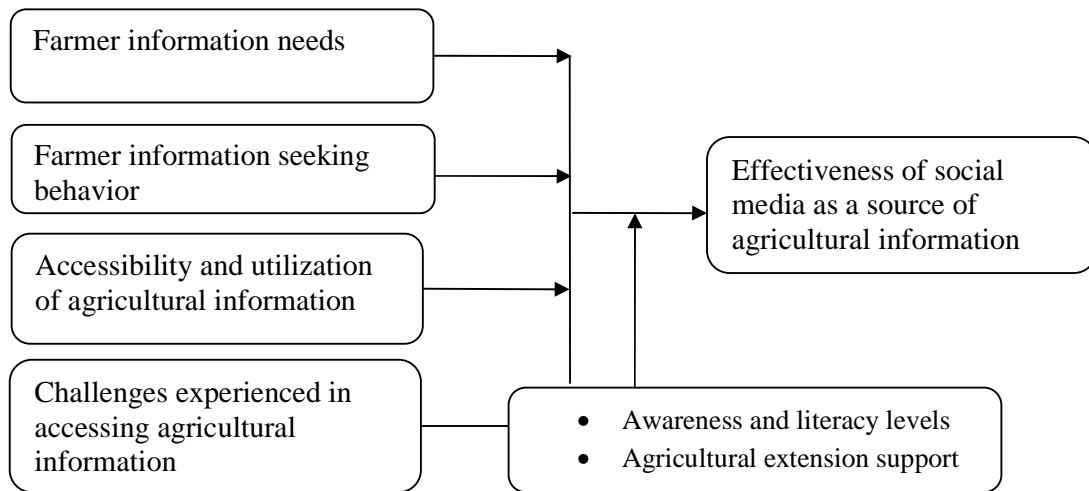


**Figure 2.1: The Transactional Model of Communication (Turner & West, 2010)**

## 2.8 Conceptual Framework

The diagram explains the relationship between the variables:

**Figure 2.2: Conceptual Framework**



*Independent variable*

*Intervening variable*

*Dependent Variable*

### 2.8.1 Operationalization of the conceptual framework

Figure 2.2 above presents a diagrammatic conceptualization of the independent and dependent variables. From the diagram, the independent variables, farmer information needs, farmer information seeking behavior, accessibility and utilization of agricultural information and challenges experienced in accessing agricultural information are conceptualized as influencing the effectiveness of social media as a source of agricultural information, which forms the dependent variable. This association is further conceptualized as being affected by other factors including awareness and literacy levels and agricultural extension support, which form the intervening variables.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the research design used and the methodology that was used to carry out the research work.

#### **3.2 Research design**

The research design that was used in this study is the descriptive survey. According to Orodho (2003) descriptive survey research is a method of collecting information by interviewing or administering a questionnaire. Survey research design mainly describes the characteristics of the population under study. The methodology that was used to collect data is the qualitative and quantitative techniques. Quantitative techniques produce discrete numerical data. Qualitative research includes designs, techniques and measures that do not produce discrete numerical data (Mugenda & Mugenda, 2003). Qualitative or descriptive methodologies offer communication researchers in-depth understanding of communication phenomena (Hocking et al., 2003). According to Mugenda and Mugenda (2003) when a researcher combines both qualitative and quantitative research methods he is able to assess the objectives of his study better because some are better assessed using quantitative methods and others by qualitative methods.

The researcher administered questionnaires to farmers in Lower Kabete region. The qualitative methods that were used included interviews of key informants and a focus group of farmers who use these social media platforms and other sources to obtain



agricultural information. The research questions best answered by in-depth interviews are value and policy oriented (Hocking et al., 2003). Using focus groups is a qualitative research method that attempts to probe a small group of people about their attitudes, values and behaviors to identify deep feelings and motivations (Hocking et al., 2003). They further state that the method can be used to understand the reasons behind a communication phenomenon. The researcher used both primary and secondary sources of data to gather information. The primary sources of data were from interviews, a focus group discussion and a survey. The secondary data used was from books, journals and research studies

### **3.3 Sampling procedure and techniques**

Sampling is the practical selection of people from some population in such a way as to ensure that they will meet whatever criteria you specify (Hocking et al., 2003). This research used non probability sampling specifically purposive sampling.

#### **3.3.1 Purposive Sampling**

Purposive sampling is a sampling technique that allows a researcher to use cases that have the required information with respect to the objectives of his or her study (Mugenda & Mugenda, 2003). A purposive sample have a certain characteristic in which we are interested in like student leaders, reticent communicators, internet users or media or other sources of messages or content of interest (Rubin et al., 2005). Purposive sampling is similar to convenience sampling in that it also involves questioning people to whom the researcher has access, but it differs in that the characteristics of the population are identified and used to guide the selection of the respondents (Hocking et al., 2003). The study purposively sampled Lower Kabete due

to its relatively conventional mode of small scale farming hence the small scale farmers in the area met the characteristics of the study. Due to time and resource constraints the researcher administered 101 questionnaires to farmers who were involved in small scale farming and had a focus group discussion with 12 farmers. In addition, 4 key informant interviewees were purposively drawn; 2 who are in the Extension service in Kiambu and Nairobi Counties and 2 from the Agricultural Information Resource Center who disseminate agricultural information using social media and other mediums.

### **3.4 Data collection procedures and Instruments**

A researcher needs to develop instruments with which to collect the necessary information about the population. In social science research the most commonly used instruments are: questionnaires, interview schedules, observational forms and standardized tests (Mugenda & Mugenda, 2003). The researcher used interview schedules to facilitate the key informant interviews and focus group discussion and a questionnaire to obtain information from the farmers.

#### **3.4.1 Focus Group**

Hocking et al. (2003) define a focus group as a group of people collected through some method that discusses some topic of concern to the research. They further state that focus groups and in-depth interviewing have been used to understand how people perceive and use communication in their daily lives. The focus group method has been primarily used in mass communication and marketing communication research (Lederman, 1990).

According to Hocking et al. (2003) an advantage of the focus groups is that they are an efficient quick and inexpensive way to collect data. In addition focus groups help in understanding the reasons behind a communication phenomenon. The data it provides is rich in that it often provides explanations for responses to questions that cannot be obtained by other methods because of time constraints. The focus group provides data that tend to be holistic and its outcome often is greater than the sum of its participants 'the explicit use of the group interaction [produces] data and insights that would be less accessible without the interaction found in a group' (Morgan 1988, p12).

According to Hocking et al. (2003) the method can be used to gather preliminary information to prepare for a larger survey or experiment.

### **3.4.2 Key Informant Interviews**

According to Mugenda and Mugenda (2003) an interview is an oral administration of a questionnaire or an interview schedule. They further state that interviews are advantageous in that they provide in-depth data which is not possible to get using a questionnaire. In depth interviews are generally conducted with key informants or people who are both willing and able to shed light on the research concern (Murphy, 1980).

### **3.4.3 Interview schedules**

An interview schedule is a guideline for asking questions in-person or over the telephone. The interview schedule differs from a questionnaire only that precise measures are not given to the respondent (Hocking et al., 2003). An interview

schedule is a set of questions that the interviewer asks when interviewing. An interview schedule makes it possible to obtain data required to meet specific objectives of the study (Mugenda & Mugenda, 2003).

#### **3.4.4 Questionnaires**

Questionnaires are commonly used to obtain important information about the population. Each item in the questionnaire is developed to address a specific objective, research question or hypothesis of the study (Mugenda & Mugenda, 2003).

#### **3.5 Data Collection**

This research used interview schedules and questionnaires to collect the primary data from the focus group, key informants and small scale farmers. Mugenda and Mugenda (2003) observe that interview schedules are used to yield qualitative data however these tools may also yield quantitative data. To yield rich data a qualitative researcher may therefore use in-depth interviews and focus group discussions. The research also obtained quantitative and qualitative data from questionnaires that were administered to the population sample.

#### **3.6 Data Analysis**

Qualitative data analysis seeks to make general statements on how categories or themes of data are related (Mugenda & Mugenda, 2003). The qualitative data was grouped into different distinct categories for analysis and established the relationships among the categories. The quantitative data was keyed in and analysed using SPSS software.

## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION

#### 4.1 Introduction

This chapter presents the findings of the study “ Use of social media as a source of agricultural information by small holder farmers; A case study of Lower Kabete, Kiambu County”. The mean, standard deviation, frequencies and percentages are presented, interpreted and the findings discussed.

#### 4.2 Response Rate

The survey questionnaire was administered to the respondents directly. A summary of the response rate is presented in table 4.1 below.

**Table 4.1: Respondents rate**

Questionnaires	Frequency	Percent (%)
Returned	77	76.2
Unreturned	24	23.8
Distributed	101	100.0

**Source: Fieldwork (2014)**

The study achieved a response rate of 76.2% with 77 respondents reached, out of the 101 targeted. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. The excellent response rate was due to the administering of the questionnaire directly to the respondents and making follow ups on the respondent’s satisfaction with phone calls.

### 4.3 Respondents' profile

The questionnaire covered the respondents' gender, age and the education level described and presented in figures and tables below.

#### 4.3.1 Gender

In order to show the gender distribution and parity in the study area, the study sought to determine the respondents' gender. Results are presented in table 4.2 below.

**Table 4.2. Respondents' distribution by gender**

Gender	Frequency	Percent (%)
Male	53	68.8
Female	24	31.2
Total	77	100.0

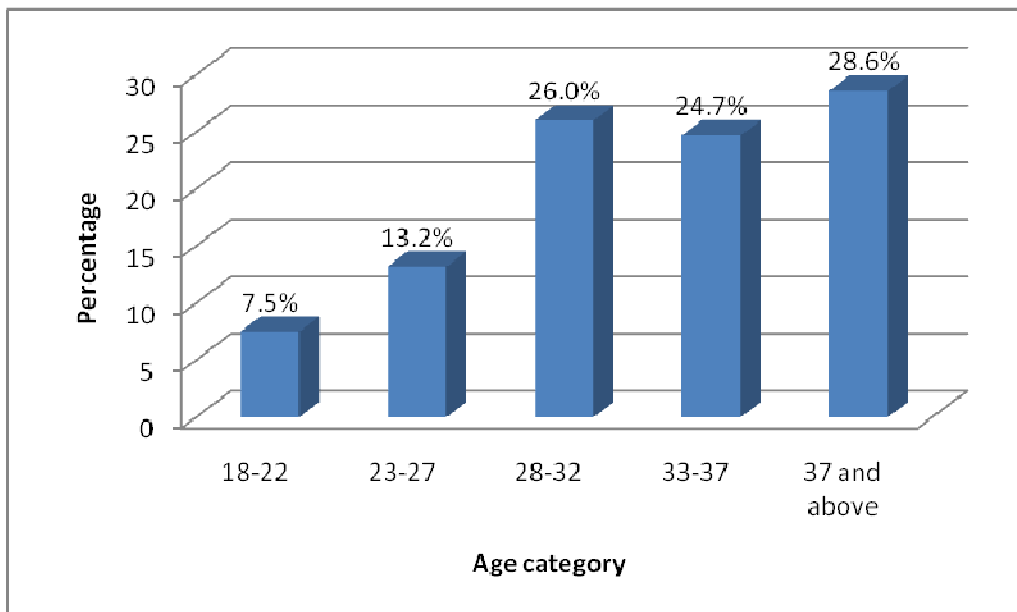
**Source: Fieldwork (2014)**

As presented in table 4.2, male respondents, 53 (68.8%), registered the most as compared to their female counterparts, 24 (31.2%). It follows then, from the findings, that the males make the dominant gender among respondents.

#### 4.3.2 Age

The study further found it necessary to establish the respondents' age bracket so as to ascertain diversity in perspectives and for representability purposes for data reliability. Figure 4.1 below presents the findings.

**Figure 4.1 Respondents' distribution by age**



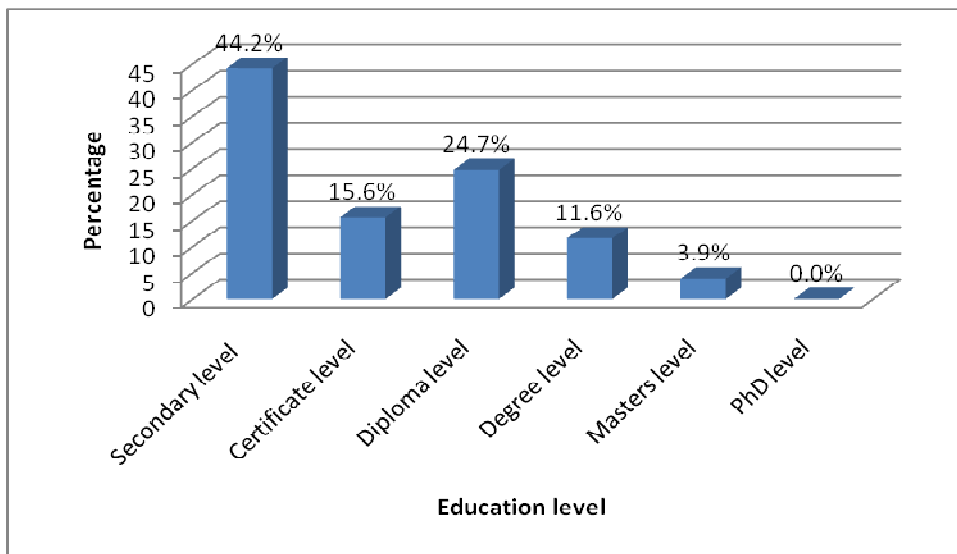
**Source: Fieldwork (2014)**

Results in figure 4.1 reveal that majority of the respondents, 28.6% fall within the 37 and above age category. This is closely followed by those within the 28-32 years and 33-37 years of age categories, recording percentages of 26.0% and 24.7% respectively. Only 13.2% of the respondents fell within the 23-27 years and 7.5% within the 18-22 years categories respectively. It can thus be deduced from the study, that age among farmers in the study area is generally distributed, a majority of whom however belonging to the middle age, above 37 years.

### 4.3.3 Education level

Respondents were also asked to indicate their highest levels of education. This would serve to show the academic backgrounds among farmers in the study area. Findings are as shown in figure 4.2 below.

**Figure 4.2: Level of Education**



**Source: Fieldwork (2014)**

It was established that, a majority, 44.2% of respondents have attained Secondary level, followed by 24.7% having attained a Diploma level. Further, 15.6% have a Certificate, closely followed by 11.6% with a Degree while only 3.9% had a Masters education level. None of the respondents had a PhD. As such, majority of the findings in the study area can be said to be of middle education levels.



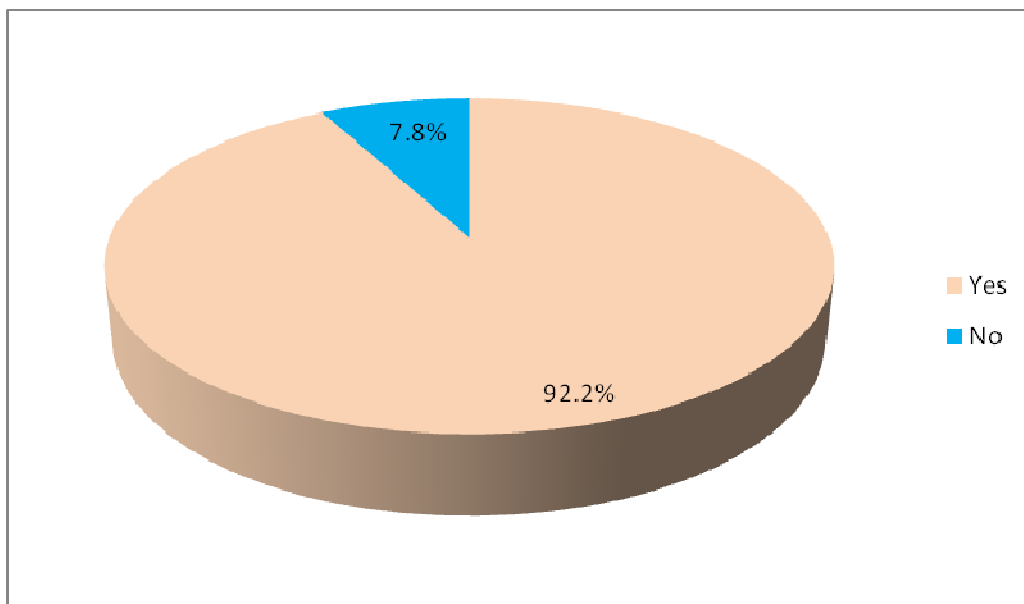
#### 4.4 Farmer Information Needs

This section presents findings to questions asked with a view to find out the information needs of farmers in Kiambu County.

##### 4.4.1 Need for agricultural information

The study first sought to establish whether or not farmers required agricultural information. This would form a basis upon which to build on the use of social media as a source of the agricultural information. Figure 4.3 below presents the findings.

**Figure 4.3 Whether or not farmers need agricultural information**



**Source: Fieldwork (2014)**

As presented in figure 4.3, a majority, 92.2% of respondents affirmed that they need agricultural information, while only 7.8% responded to the contrary.

This was confirmed in interviews with a Kiambu County extension services officer and a social media administrator, where responding to the question as to whether small holder farmers in Kiambu require agricultural information, it was revealed that indeed farmers in the study area require agricultural information, some sourcing for the same from as far as Israel.

*“Yes, agricultural information is very dynamic for example, there is always emergence of pests and diseases; there is always an evolution of technology; Farmers lack of knowledge for example the right crops to grow. Some are however very knowledgeable and sometimes extension officers obtain information from them. In some zones like Kikuyu and Lari the farmers use hi-tech methods and get information from as far as Israel. The extension officers in Kiambu serve mainly small holder farmers.”* (Interview with an Extension services officer)

*“Yes, farmers are able to acquire information about certain crops and livestock improving their knowledge leading to the yielding of high productivity.”* (Interview with a Social Media Administrator)

The same was reiterated in a focus group discussion.

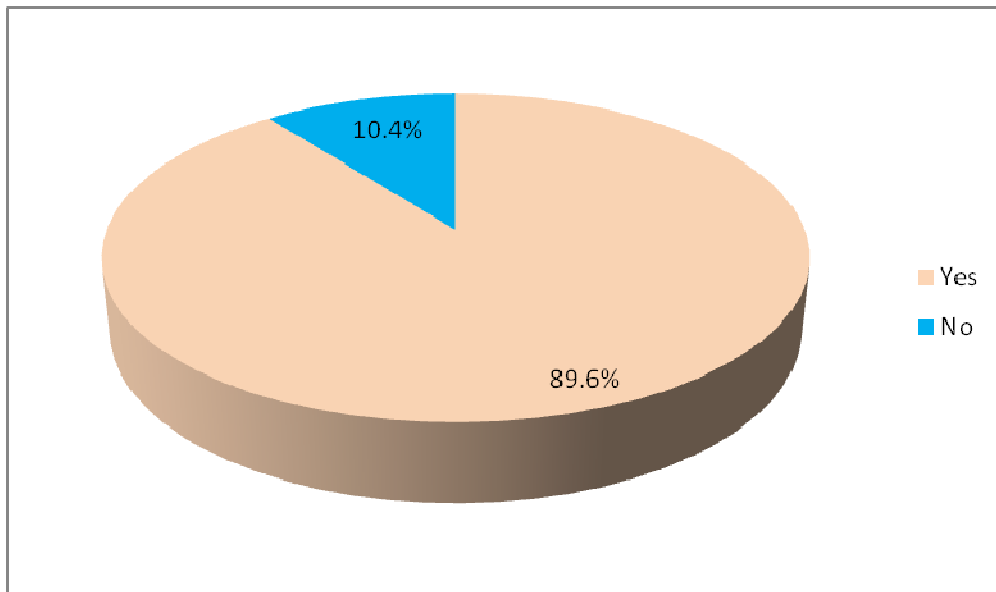
*“Yes, we need to acquire information about certain crops and to equip oneself as a farmer with the right information.”* (Inferred from a Focus Group Discussion)

As such, it can be deduced that agricultural information is highly required among a majority of farmers in the study area.

#### 4.4.2 Search for agricultural information

Respondents were then asked whether or not they look for the agricultural information. This would further build on the use of social media as one of the sources from which they look for agricultural information. Figure 4.4 below presents the findings.

**Figure 4.4: Whether or not farmers search for agricultural information**



**Source: Fieldwork (2014)**

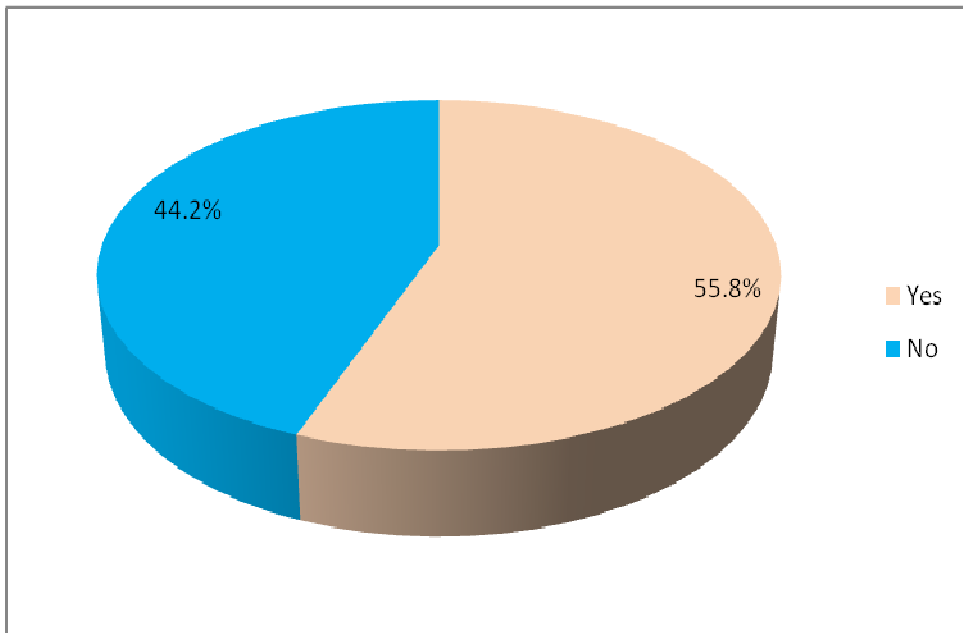
It was revealed, as presented in figure 4.4, that a majority, 89.6% of respondents further seek for the agricultural information they need, while only 10.4% responded to the contrary.

This finding was further supported by interview respondents, where it was established that farmers in the County are well educated as they attend trainings, seminars and workshops where they obtain basic knowledge on farming and hence are able to educate other farmers. Some also have an educational background in agriculture which leaves them more advantageous than other farmers. An observation was however made by an extension officer that there is lack of self-initiative by most farmers and procrastination yet there is thirst for information. It follows then, that of those farmers who need agricultural information, a majority go a step further and seek for the same.

#### **4.4.3 Availability of extension services to farmers**

The study further found it paramount to establish whether or not extension services are readily available to the farmers. This would give an indication of whether there exist other possible formal sources of agricultural information, complementing social media. Figure 4.5 below presents the findings.

**Figure 4.5: Whether or not extension services are readily available to farmers**



**Source: Fieldwork (2014)**

A close divide was established on whether extension services are readily available to farmers, whereby a majority, 55.8% affirmed that they are readily available while a close percentage, 44.2% responded to the contrary.

It was further revealed in an interview that among the most common services that extension officers provide small holder farmers in Kiambu include enterprise selection, farm planning, market price information, farm visits, one on one demos, group trainings, demos, field days and exhibitions. It was further established that the services are demand driven.

Contrary findings were however obtained in the Focus Group:

*“No, the extension officers are not willing to work with the farmers because they tend to be absent in their offices during working hours and also not every farmer is aware of extension services.”*(Inferred from a focus group discussion)

It was established in an interview that currently there are about 306,000 farmers in Kiambu County against 600 public extension officers. It can therefore be deduced that whereas extension services are available to some farmers, others are of the opinion that the same is not willingly and widely offered.

This finding supports Gakuru et al. (2009) who state that the number of extension workers has been decreasing while farmer numbers have been increasing; hence the need for innovative services to address this gap. This finding also supports Shaik et al. (2004) who assert that agricultural extension systems in most developing countries are under-funded and have had mixed effects. Much of the extension information has been found to be out of date, irrelevant and not applicable to small farmers' needs, leaving such farmers with very little information or resources to improve their productivity. Sanusi (2010) notes that information is an important resource for agriculture and rural development and communicating information as a major function of extension aimed at the promotion of agricultural development. The finding further conform to Chapman and Slaymaker' (2002) and Roman and Colle' (2003) observations that information needs assessment should act as an initial guide to developing programs, so that contextually appropriate content is generated.

#### 4.4.4 Information needs sought by farmers on social media

The study sought to establish the frequency with which various types of information needs were sought by farmers on social media. This was on a five-point likert scale, where 1= Not At All, 2= Once in a While, 3= Sometimes, 4= Fairly Often and 5= frequently. The scores of 'Not At All' and 'Once in a While' have been taken to represent information not often sought, equivalent to a mean score of  $0 \leq S.E. \leq 2.4$ . The score of 'Sometimes' has been taken to represent a variable which was moderately sought after, equivalent to a mean score of  $2.5 \leq M.E. \leq 3.4$ . The score of 'Fairly Often' and 'Frequently' have been taken to represent information very often sought, equivalent to a mean score of  $3.5 \leq L.E. \leq 5.4$ . Table 4.3 below presents the findings.

**Table 4.3: Information needs sought by farmers on social media by frequency**

<b>Statement</b>	<b>Mean</b>	<b>Standard Deviation</b>
Technological information	3.701	0.9431
Educational & training information	3.913	0.5423
Business and trade information	3.176	0.8612
Government agricultural policies and plans	3.113	1.0617
Weather condition and Environmental information	3.363	1.2610
Variety of seeds	2.984	0.9745
Agrochemicals	3.853	0.6734
Credit facilities, source, terms & conditions	2.152	1.0080
Market trend, price, and stock available	2.357	0.6834

**Source: Fieldwork (2014)**

As presented in table 4.3 above, a majority of respondents using the social media as a source of information often seek for information on educational & training information ( $X = 3.913$ ,  $S.D = 0.5423$ ); Agrochemicals ( $X = 3.853$ ,  $S.D = 0.6734$ ); and Technological information ( $X = 3.701$ ,  $S.D = 0.9431$ ). A majority further only moderately seek for information on Weather condition and Environmental information ( $X = 3.363$ ,  $S.D = 1.2610$ ); Business and trade information ( $X = 3.176$ ,  $S.D = 0.8612$ ); Government agricultural policies and plans ( $X = 3.113$ ,  $S.D = 1.0617$ ) and Variety of seeds ( $X = 2.984$ ,  $S.D = 0.9745$ ). The least often sought information regards Market trend, price, and stock available ( $X = 2.357$ ,  $S.D = 0.6834$ ) and Credit facilities, source, terms & conditions ( $X = 2.152$ ,  $S.D = 1.0080$ ).

It further emerged in an interview that farmers in the study area:

*“are often looking for new emerging enterprises like mushrooms, quails, strawberry farming and technology like green house, snail farming and high value crops. Young farmers look for enterprises that are upcoming, profitable, and require less labor; they are interested in high labor crops; they look for information on technology like green house, mushrooms farming, strawberry farming, snail farming.”* (Interview with an extension services officer)

On social media, it was established that:

*“They are looking for general information for example where to purchase or sell farm products; latest technology on farming; the types of seeds available to the market; conditions for growing particular kinds of crops; and information about pests and disease.”* (Interview with a social media administrator)



Respondents from the Focus Group reiterated this:

*“Types of seeds; how to grow plants (requirements) for example research on conditions for growing crops for example climate and soil type, comparing what one is doing with what others are doing, horticulture; market information for various products for example markets for eggs and meat; profitable agricultural practice/enterprise; and information about pests and diseases.”* (Inferred from a focus group discussion)

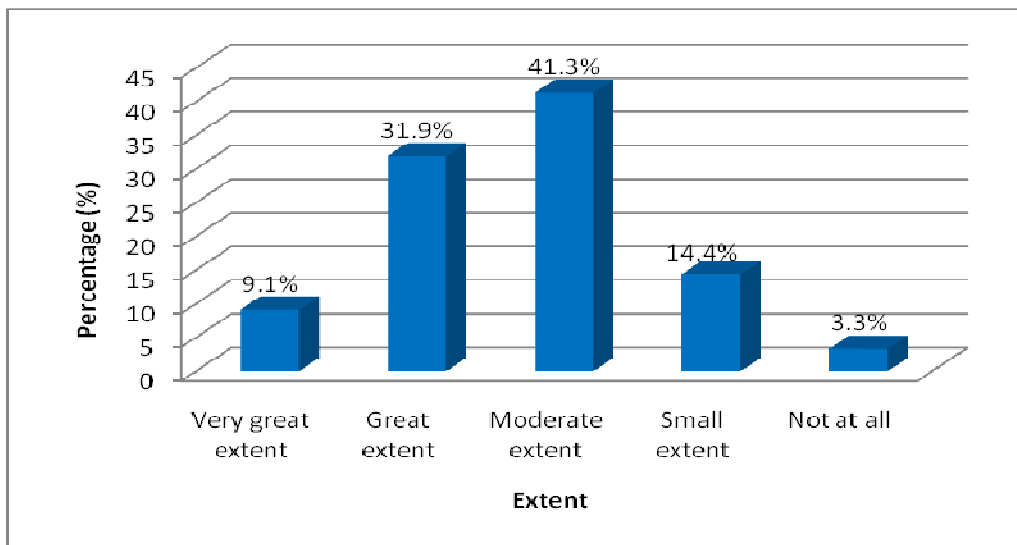
As such, it can be concluded that overall, a majority of farmers use social media to seek for a variety of agricultural information, mostly scientific, educational and technology based, including training information, agrochemicals and technological information. A majority of farmers however do not take as much interest in market-based agricultural information including market trends, price, and stock available as well as credit facilities, source, terms and conditions.

This is in support of Gundu (2009) who argues that agricultural information is necessary to reach farmers and agriculturists in order to meet their needs. If farmers for example have access to relevant agricultural information, food shortages may be eradicated. Such information is crucial to their farming activities and impact on household food security. According to Babu et al. (2012), understanding farmers' information needs helps in designing appropriate policies, programs, and organizational innovations. The consideration of users' information needs is very vital in the provision of need-based and relevant information to them (Anwar & Supaat, 1998).

#### 4.4.5 Extent to which information needs are addressed

Respondents were further asked to rate the extent to which their information needs were addressed. This would also show the efficacy of the information sources a majority of farmers engage. Figure 4.6 below presents the findings.

**Figure 4.6 Extent to which information needs are addressed**



**Source: Fieldwork (2014)**

As figure 4.6 above indicates, a majority of respondents, 41.3%, rate the extent to which their information needs are addressed as moderate, followed by 31.9% who rate the extent as great and 14.4% rating it as small. Only 3.3% of respondents assert that their information needs are not addressed to any extent. Going by responses by a majority, it can be deduced that farmer information needs in the study area are addressed moderately to greatly.

Closer findings were registered in an interview on whether farmers can fully rely on the media for information if there are no extension services readily available. It was revealed that the media can complement extension services but cannot be fully relied on:

*“No, the media is usually problem directed but often lacks the expertise. Extension officers are a power house and they can solve a host of problems in regard to their experience.”*(Interview with an extension services officer)

It was further revealed in responses from the focus group that a significant gap does exist.

*“Yes there is a very big information gap. The farmer has to follow up with the extension services and the extension officers do not willingly execute their services while the information they have is not up to date for example technology like aqua-phonics, hydroponics.”*(Inferred from a focus group discussion)

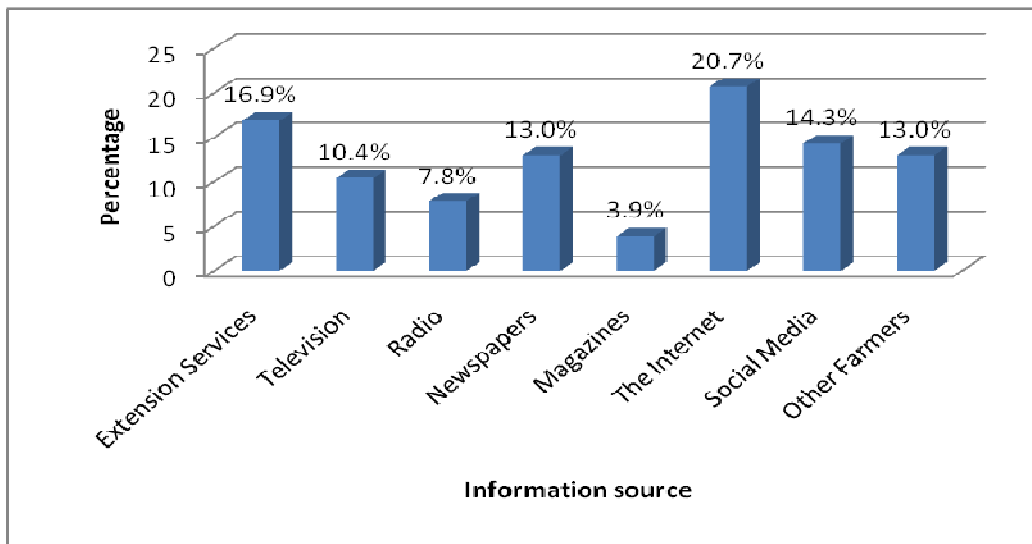
#### **4.5 Information seeking behavior**

This section presents findings to questions asked with a view to establish information seeking behavior of the farmers in Kiambu County.

##### **4.5.1 Source of agricultural information**

The study sought to establish the various avenues from which respondent farmers source their agricultural information. This would give an indication on the place of social media as a source of agricultural information, as compared to other possible sources. Figure 4.7 below presents the findings.

**Figure 4.7 Source of agricultural information**



**Source: Fieldwork (2014)**

It was established, as presented in figure 4.7 above that a majority of respondents, 20.7% access the internet for agricultural information, followed by 16.9% who use extension services, then 14.3% seeking information from the social media and 13.0% from other farmers. Among the least used sources include radio and magazines, recording percentages of 7.8% and 3.9% respectively.

The study further sought to find out from the key informants whether small holder farmers from Kenya obtain information from the media (Radio, Television and Print).

It was revealed that they do, especially from vernacular radio stations as they are many and more popular to the farmers.

Similar findings were registered in the focus group discussion:

*“Extension services; television for example Shamba Shape up, the show on K24 and news; radio for example Inooro FM on the Murimi program; East Africa seeds and Amiran Kenya gives farming tips on their manuals; horticulture news (hot news) website, Facebook on Young Farmers Market.”* (Inferred from a focus group discussion)

Other sources of information were also revealed:

*“Newspapers, magazines for example organic farming magazines, manuals from manufacturing companies for example Simlaw; agricultural institutions for example KARI and KEFRI both in Upper Kabete; knowledge from school and agricultural textbooks; experienced farmers who charge for training and exhibitions.”* (Inferred from a focus group discussion)

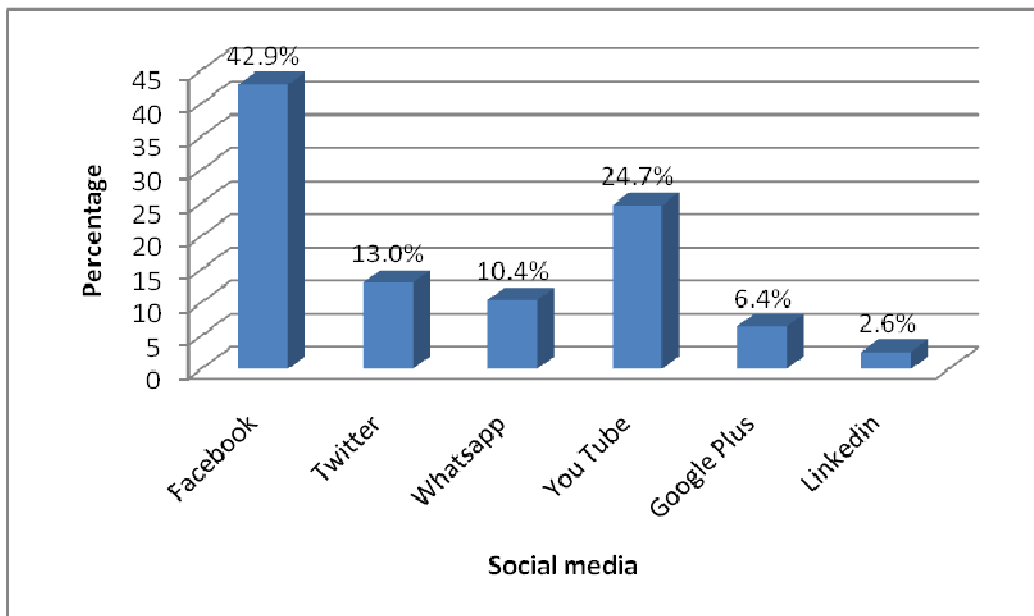
It follows then, that, farmers in the study area source for agricultural information from a variety of avenues, key among which include the internet, social media and extension services. As such, the social media, as compared to other sources is significantly adopted among farmers in the study area.

#### **4.5.2 Social media tools**

Respondents were further asked to indicate the social media tools they mostly used to obtain agricultural information. This would give an indication of the particular avenues of social media platforms farmers use in looking for agricultural information.

Figure 4.8 below presents the findings.

**Figure 4.8: Social media tools**



**Source: Fieldwork (2014)**

It was established that a majority of respondents, 42.9% use Facebook as their main social media platform when looking for agricultural information, followed by 24.7% citing YouTube then 13.0% citing Twitter. Google plus and LinkedIn are the least used as indicated by only 6.4% and 2.6% of respondents respectively. The findings clearly illustrate the major platforms in use by farmers to source for agricultural information.

**Similar findings were recorded in key informant interviews:**

*“Those actively seeking are in the youth demographic especially those who socialize online they are using social media in a constructive way as organizations are going online to reach most of these audiences.”* (Interview with an extension services officer)

*“Facebook. It has more users; it is unlimited in terms of information capacity unlike twitter which is limited to 140 characters.”* (Interview with a social media administrator)

These findings are supported by Gakuru et al. (2009) who found that agricultural informatics is a new concept that has arisen following the rapid development in ICT and the internet. Referred to as e-agriculture, agricultural informatics is an emerging field which combines the advances in agricultural informatics, agricultural development and entrepreneurship to provide better agricultural services, enhanced technology dissemination, and information delivery through the advances in ICT and the internet. Shaik et al. (2004) further add that the main focus of ICT in agriculture is meeting the farmers’ needs for information.

#### **4.5.3 Farmer information seeking behavior**

Respondents were further asked to indicate their levels of agreement with statements posed with a view to establish key farmer information seeking behavior. This was also on a five-point likert scale, where, 1= strongly disagree; 2= disagree; 3= neutral; 4 = agree; 5= strongly agree. The scores of ‘Strongly Disagree’ and ‘Disagree’ have been taken to represent a variable which was not agreed upon, equivalent to a mean score of  $0 \leq S.E \leq 2.4$ . The score of ‘Neutral’ has been taken to represent a variable which was only moderately agreed upon, equivalent to a mean score of  $2.5 \leq M.E. \leq 3.4$ . The score of ‘Agree’ and ‘Strongly Agree’ have been taken to represent a variable which was highly agreed upon, equivalent to a mean score of  $3.5 \leq L.E. \leq 5.4$ . Table 4.4 below presents the findings.

**Table 4.4 Farmer information seeking behavior**

<b>Motivation</b>	<b>Mean</b>	<b>Standard Deviation</b>
I compare information from different sources	3.239	0.8317
Selecting source is important	3.993	0.6315
I need assistance from intermediary	3.725	1.0092
I don't know information needed	2.257	1.3718
It takes a lot of effort to search information	3.342	0.6347
It is hard to decide which information to trust	3.840	0.9130
I feel confused by information available	2.326	1.0431
I feel takes time to search for information	3.264	0.9132
It is beneficial to search for information	3.842	0.7466
I get as much information as possible before making decision	3.732	0.6360

**Source: Fieldwork (2014)**

A majority of respondents were found to highly agree that selecting source is important ( $X = 3.993$ ,  $S.D = 0.6315$ ); It is beneficial to search for information ( $X = 3.842$ ,  $S.D = 0.7466$ ); It is hard to decide which information to trust ( $X = 3.840$ ,  $S.D = 0.9130$ ); they need assistance from an intermediary ( $X = 3.725$ ,  $S.D = 1.0092$ ) and that they get as much information as possible before making decision ( $X = 3.732$ ,  $S.D = 0.6360$ ). A majority of respondents only moderately agree however that it takes a lot of effort to search information ( $X = 3.342$ ,  $S.D = 0.6347$ ); they feel it takes time to search for information ( $X = 3.264$ ,  $S.D = 0.9132$ ); and that they compare information from different sources ( $X = 3.239$ ,  $S.D = 0.8317$ ).



A majority further disagree that I feel confused by information available ( $X = 2.326$ ,  $S.D = 1.0431$ ); and that they do not know information needed ( $X = 2.257$ ,  $S.D = 1.3718$ ). It can thus be deduced that generally, a majority of farmers approach the use of social media in agricultural information seeking with a positive attitude, pointing to the assumption that social media is largely beneficial as a source of agricultural information. A majority is however seen to be put off by the perceived technical difficulties in accessing the information.

The finding is in line with Mbugua (2012) who state that farmer's preference in information dissemination pathways and media is important in determining adoption of technologies and productivity. Babu et al. (2012) also points out that social capital can play a role in farmers' information search behaviour. Progressive farmers, for example, could have a higher propensity to invest in accumulating social capital by joining farmers' clubs and associations, which may enhance their access to current information. Further studies by Diekmann et al. (2009) also showed that farmers' attitudes toward information search, farm sales, years farming, internet access, and farm type were good predictors of their information search strategies. Those farmers with more self-confidence about making decisions tended to have higher information search behavior. Increases in the productivity of smallholder agriculture crucially depend on information related to production, processing and markets, identifying farmers' sources of information and search behavior becomes important (Babu et al., 2012).

## 4.6 Accessibility and utilization of agricultural information from social media among farmers in Kiambu County

This section presents findings to questions asked with a view to determine the accessibility and utilization of agricultural information from social media among farmers in Kiambu County.

### 4.6.1 Frequency of access to social networking accounts

Respondents were asked to indicate how often they accessed their social networking accounts. This would give an indication to the degree of adoption of the social media among farmers in the study area. Table 4.5 below presents the findings.

**Table 4.5: Frequency of access to social networking accounts**

	Hourly		Daily		Weekly		Monthly		Never	
	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)
Facebook	3	3.9	16	20.8	36	46.8	11	14.3	12	15.6
Twitter	0	0.0	0	0.0	7	9.1	13	16.9	57	74.0
Youtube	0	0.0	3	3.9	7	9.1	21	27.3	46	59.7
Whatsapp	2	2.6	5	6.5	12	15.6	10	13.0	48	62.3
Google Plus	2	2.6	11	14.3	17	22.1	13	16.9	34	44.2
Linkedin	0	0.0	0	0.0	0	0.0	7	9.1	70	90.9

**Source: Fieldwork (2014)**

It was established as presented in table 4.5 above that a majority of Facebook users, 36 (46.8%), in the study area access the platform on a weekly basis, followed by 16 (20.8%), on a daily basis. A majority of Twitter users, 13 (16.9%) access the same on a monthly basis. As for Whatsapp, a majority of users, 12 (15.6%) were found to accesses the site on a weekly basis, while a majority of Youtube users, 21 (27.3%) access the same on a monthly basis. A majority of Google Plus users, 17 (22.1%) were on the other hand found to use the platform on a weekly basis while only 7 (9.1%) of LinkedIn users use the platform on a monthly basis. As such, it can be deduced that Facebook is the most common social media platform among farmers in the study area, a majority of whom using the media on a weekly basis. Also, it can be deduced that overall, social media users in the study area access the various platforms from weekly to monthly basis depending on the popularity of the platforms.

According to Maru (2008) as quoted by (Mburu, 2013) due to the advent use of new ICT, especially computers, the internet and cellular telephony, there is an ongoing transformation of agriculture through innovation that is largely enabled through information sharing and exchange between agricultural communities however Xiaolan (2011) as quoted by (Mburu, 2013) argues that the digital divide is not merely a problem of access to ICT, it is part of a larger developmental problem in which vast sections of the world's population are deprived of the capabilities necessary to use ICTs, acquire information and convert it into useful knowledge.

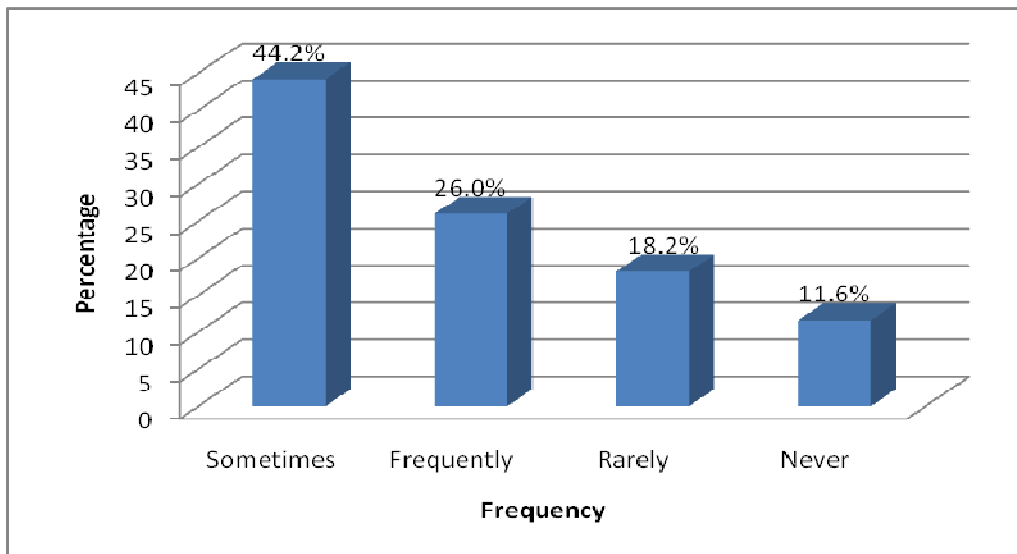
Extension services can be made available using various ICT channels. Broad basing agricultural extension activities; developing farming system research and extension; having location-specific modules of research and extension; and promoting market

extension, sustainable agricultural development, participatory research, etc. are some of the numerous areas where ICT can play an important role (Shaik et al., 2004). They further state that IT can help by enabling extension workers to gather, store, retrieve and disseminate a broad range of information needed by farmers, thus transforming them from extension workers into knowledge workers.

#### 4.6.2 Frequency of Social media use for agricultural information

Respondents were further asked to indicate how often they used social media accounts to obtain agricultural information. This would give an indication to the degree of adoption of social media as an avenue for agricultural information. Figure 4.9 below presents the findings.

**Figure 4.9 Frequency of social media use for agricultural information**



**Source: Fieldwork (2014)**

It was revealed that a majority, 44.2%, of farmers using social media in the study area use the various platforms to access agricultural information sometimes, distantly followed by those, 26.0%, using the respective media frequently, then those, 18.2%, rarely using the same while only 11.6% do not access the media at all, to obtain agricultural information. It follows then, that while the social media is increasingly being taken up by farmers in the study area, the same is yet to fully be leveraged to obtain agricultural information, with only 26% using the media frequently while majority only use the same sometimes. A significant number either rarely or never use the media to obtain agricultural information.

#### 4.6.3 Activity in social media use for agricultural information

The study further sought to find out the degree of activity social media users in the study area engaged in with respect to their information needs. Table 4.6 below presents the findings.

**Table 4.6 Activity in social media use for agricultural information**

Question	Yes		No	
	F	(%)	F	(%)
Do you post queries on social media platforms?	41	53.2	36	46.8
Do you contribute to discussions on social media?	46	59.7	31	40.3
Do you share agricultural information on social media?	27	35.1	50	64.9
Does social media fulfill your information needs?	29	37.7	48	62.3
Do you prefer obtaining your agricultural information from social media over other channels?	31	40.3	46	59.7

**Source: Fieldwork (2014)**

It was revealed that a majority of farmers in the study area actively engage social media in posting queries and contributing to discussions, as indicated by 41 (53.2%) and 46 (59.7%) of respondents. A majority, 50 (64.9%) do not share agricultural information. Further, it was revealed that a majority of respondents, 48 (62.3%) do not have their information needs fulfilled by the social media while a further majority, 46 (59.7%) do not prefer obtaining their agricultural information from social media over other channels.

It was emergent further in key informant interviews that:

*“Small holder farmers from Kenya are especially the younger demographics. They are contributing general information via the Social media groups like Mkulima young and Shamba Shape up Facebook pages which discusses ideas on farming.”* (Interview with a social media administrator)

Asked on whether in their opinion social media fulfils their information needs on agricultural matters, contrary findings were realized from the focus group that:

*“Yes, in that: it is easy to access; and detailed where one can compare feedback from various people; allows one to share knowledge about certain agricultural information with others, it is cheap, time saving, efficient and one can print and store; and it addresses problems faced by farmers to a great extent.”*(Inferred from a focus group discussion)

From the findings, it can be deduced that while most farmers using the social media are active on the same, most do not share agricultural information. Respondents are also split on whether they find the platform fulfilling their information needs.

#### **4.7 Challenges encountered when trying to obtain information from social media by farmers in Kiambu County**

Respondents were further asked to indicate the various challenges they encountered when trying to obtain information from social media. Among the most common challenges faced include poor network access, power outages, and costly charges when accessing the internet. Similar findings were noted in both the key informant interviews and the focus group discussion.

*“They have challenges with soil fertility, pests and diseases, source of seeds and fertilizers; lack of capital; lack of access to modern technology source; lack of clarity and focus on what they want to do with their land or problems facing them; lack of capital access to make use of the information; lack of capability to translate the information; and lack of finances.”* (Interview with an extension services officer)

*“how to access the information and from which platforms; lack of empowerment to access the gadgets whereby the channels are many so sieving and choosing the right outlets and channels can be a challenge; lack of internet availability; mobile phones charges; lack of IT prowess by the extension officers; and some social media platforms are driven by self interest....”* (Interview with a social media administrator)

*“The social media has its own limitations when obtaining information for example mobile phones need to be constantly charged, some phones don’t access the internet, one cannot print materials from mobile phones; failure with the internet connectivity; and that sometimes the information obtained is not reliable.”* (Inferred from a focus group discussion)

Similarly, Babu et al. (2012) points out that the major constraints to information access are poor availability, poor reliability, a lack of awareness of information sources available and untimely provision of information. Van and Fortier (2000) add that smallholder farmers usually experience challenges in obtaining agricultural information due to lack of infrastructure. There have been short comings of traditional print and library materials of providing agricultural information to rural farmers who are generally illiterate and relatively remote from formal sources of information like extension stations and libraries.

Further, according to Ndung’u and Waema (2011), households’ perspective on the development outcomes of internet usage and mobile phones indicated that internet access and usage was limited and restricted to urban areas while mobile phones were distributed across the country According to Synovate (2009) rural internet access and usage is more driven by mobile phones compared to urban areas. An estimated 47 percent of rural internet access is through the mobile phone as compared to 39 percent of urban internet access.



## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of the research findings, the implications from the findings and suggestions of areas for further research.

#### 5.2 Summary of Key Findings

The study provided the descriptive type of data analysis, in which the mean, standard deviation, frequencies and percentage values were determined.

The study first sought to find out the information needs of farmers in Kiambu County. To this end, the study sought to establish whether or not farmers required agricultural information, to which a majority, 92.2% of respondents affirmed that they indeed need agricultural information. Respondents were then asked whether or not they look for the agricultural information. It was revealed, that a majority, 89.6% of respondents further seek for the agricultural information they need. It was further established that a majority of respondents using social media as a source of information often seek for information on educational & training information ( $\bar{X} = 3.913$ ); Agrochemicals ( $\bar{X} = 3.853$ ); and Technological information ( $\bar{X} = 3.701$ ). The least often sought information regards Market trend, price, and stock available ( $\bar{X} = 2.357$ ) and Credit facilities, source, terms & conditions ( $\bar{X} = 2.152$ ). A majority of respondents, 41.3%, further rated the extent to which their information needs are addressed as moderate, followed by 31.9% who rate the extent as great.

The study also sought to establish the information seeking behavior of the farmers in Kiambu County. In this regard, respondents were first asked to indicate the various avenues from which they sourced their agricultural information. A majority of respondents, 20.7% access the internet for agricultural information, followed by 16.9% who use extension services, then 14.3% seeking information from social media and 13.0% from other farmers. Among the least used sources include radio and magazines, recording percentages of 7.8% and 3.9% respectively. Further, it was revealed that a majority of respondents, 42.9% use Facebook as their main social media platform when looking for agricultural information, followed by 24.7% citing Youtube then 13.0% citing Twitter. Respondents were further asked to indicate their levels of agreement with statements posed with a view to establish key farmer information seeking behavior. A majority of respondents were found to highly agree that selecting source is important ( $X = 3.993$ ); It is beneficial to search for information ( $X = 3.842$ ); It is hard to decide which information to trust ( $X = 3.840$ ); they need assistance from an intermediary ( $X = 3.725$ ) and that they get as much information as possible before making decisions ( $X = 3.732$ ). A majority further disagree that they feel confused by information available ( $X = 2.326$ ); and that they do not know information needed ( $X = 2.257$ ).

The study further sought to determine the accessibility and utilization of agricultural information from social media among farmers in Kiambu County. Respondents were therefore asked to indicate how often they accessed their social networking accounts. It was established as presented in table 4.5 above that a majority of Facebook users, 36 (46.8), in the study area access the platform on a weekly basis, followed by 16 (20.8%), on a daily basis. A majority of Youtube users, 21 (27.3%) access the same

on a monthly basis. As for Whatsapp, a majority of users, 12 (15.6%) were found to access the site on a weekly basis, while a majority of twitter users, 13 (16.9%) access the same on a monthly basis. A majority of Google Plus users, 17 (22.1%) were on the other hand found to use the platform on a weekly basis while only 7 (9.1%) of LinkedIn users use the platform on a monthly basis.

Respondents were further asked to indicate how often they used social media accounts to obtain agricultural information. It was revealed that a majority, 44.2%, of farmers using social media in the study area use the various platforms to access agricultural information sometimes, distantly followed by those, 26.0%, using the respective media frequently. The study further sought to find out the degree of activity social media users in the study area engaged in with respect to their information needs. It was revealed that a majority of farmers in the study area actively engage the social media in posting queries and contributing to discussions, as indicated by 41 (53.2%) and 46 (59.7%) of respondents. A majority, 50 (64.9%) do not share agricultural information. It was also revealed that a majority of respondents, 48 (62.3%) do not have their information needs fulfilled by the social media while a further majority, 46 (59.7%) do not prefer obtaining their agricultural information from social media over other channels.

Finally, the study sought to examine the challenges experienced in accessing agricultural information from social media by farmers in Kiambu County. Among the most common challenges faced include poor network access, power outages, and costly charges when accessing the internet.

### **5.3 Conclusion**

From the analysis, it can be deduced that agricultural information is highly required among a majority of farmers in the study area. The farmers who need agricultural information, a majority go a step further and seek for the same. To fulfill these informational needs, a majority of farmers use social media to seek for a variety of agricultural information, mostly scientific, educational and technology based, including training information, agrochemicals and technological information. A majority of farmers however do not take much interest in market-based agricultural information including market trend, price, and stock available as well as credit facilities, source, terms and conditions.

The study further deduces that farmers in the study area source for agricultural information from a variety of avenues, key among which include the internet, social media and extension services. The study further deduces that a majority of farmers have a positive attitude towards the use of social media in seeking agricultural information hence the assumption that social media is largely beneficial as a source of agricultural information and that it is also cheap and convenient. A majority however seem to be discouraged by the perceived technical difficulties in accessing the information.

It can further be deduced from the findings obtained that Facebook is the most common social media platform among farmers in the study area, a majority of whom use the media on a weekly basis. It can also be deduced that overall, social media users in the study area access the various platforms from weekly to monthly basis depending on the popularity of the platforms. However, while social media is

increasingly being taken up by farmers in the study area, the same is yet to be fully utilised to obtain agricultural information, with only 26% using the medium frequently while majority only use the same sometimes. A significant number either rarely or never use the media to obtain agricultural information. While most farmers using social media are active on the same, most do not share agricultural information. Respondents are split on whether they find the platform fulfilling their information needs.

Among the most common challenges faced include poor network access, power outages, and costly charges when accessing the internet.

#### **5.4 Recommendations**

1. Kiambu County can establish centers whereby farmers can access agricultural information online.
2. Social media can play a role in building feedback mechanisms and allowing for the monitoring and evaluation of the impact of agricultural projects. Social media can also be utilised more because it is cheaper to access hence it can be advantageous to organizations who want to disseminate agricultural information.
3. Social media can be used to complement extension services in areas where there are geographically dispersed groups and where extension officers cannot effectively reach all farmers due to various factors.
4. Social media can also be used to access various markets; local and international.

5. Social media can complement communication campaigns that for instance persuade users to take up agriculture as an alternative source of employment and it can also be beneficial as a platform for lobbying on agricultural matters.

### **5.5 Suggestions for further studies**

1. The present study focused on the use of social media as a source of agricultural information with reference to small scale farmers in Lower Kabete, Kiambu County. A similar study can be undertaken targeting a different study area or a particular area of social media use, case in point the role of social media in farm produce performance.
2. Further research could be undertaken on social media strategies that can be used to effectively reach out to farmers.
3. A study can be done on the effectiveness of social media in shaping the content of agricultural programs on traditional media.

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## APPENDICES

### Appendix I: Questionnaire

This is a questionnaire for an academic study on the use of social media to obtain agricultural information by small holder farmers in Kenya. The information provided will be used for this study only and will be held with the utmost confidentiality.

#### SECTION A: DEMOGRAPHICS

1. What is your gender?

a) Male [ ]

b) Female [ ]

2. What is your age category?

18-22 [ ]

23-27 [ ]

28-32 [ ]

33-37 [ ]

37 and above [ ]

3. What is your highest level of Education?

Secondary level [ ]      Certificate level [ ]

Diploma level [ ]      Degree level [ ]

Masters level [ ]      PhD level [ ]

Others (please specify).....

**SECTION B: FARMER INFORMATION NEEDS**

1. Do you require agricultural information?

a) Yes [ ]

b) No [ ]

2. Do you look for agricultural information?

a) Yes [ ]

b) No [ ]

3. Are extension services readily available to you?

a) Yes [ ]

b) No [ ]

4. Below is a range of possible information needs sought by farmers on social media.

Kindly indicate the frequency with which each type of information need applies to you on the scale of 1-5, where 1= Not At All, 2= Once in a While, 3= Sometimes, 4= Fairly Often and 5= Frequently

	1	2	3	4	5
Technological information					
Educational & training information					
Business and trade information					
Government agricultural policies and plans					
Weather condition and Environmental information					
Variety of seeds					
Agrochemicals					
Credit facilities, source, terms & conditions					
Market trend, price, and stock available					



5. To what extent are your information needs addressed?

Very great extent [ ]

Great extent [ ]

Moderate extent [ ]

Small extent [ ]

No extent [ ]

**SECTION C: FARMER INFORMATION SEEKING BEHAVIOUR**

1. Where do you get your agricultural information from? Tick where appropriate

a) Extension Services [ ]

b) Television [ ]

c) Radio [ ]

d) Newspapers [ ]

e) Magazines [ ]

f) SMS [ ]

g) The Internet [ ]

h) Social Media [ ]

i) Other Farmers [ ]

j) Others (please specify)

.....  
.....  
.....  
.....  
.....

2. Which of the following social media tools do you use to obtain agricultural information?

a) Facebook [ ]

b) Twitter [ ]

c) Whatsapp [ ]

d) You Tube [ ]

e) Google Plus [ ]

f) Linkedin [ ]

g) Others (please specify)

.....

3. Below is a list of possible farmer information seeking behavior. Kindly indicate your level of agreement with each item as it applies to you. Use a scale of 1-5 where 1= strongly disagree, 2= disagree, 3= moderately agree, 4= agree and 5= strongly agree.

	1	2	3	4	5
I compare information from different sources					
Selecting a source is important					
I need assistance from an intermediary					
I don't know information needed					
It takes a lot of effort to search information					
It is hard to decide which information to trust					
I feel confused by information available					
I feel takes time to search for information					
It is beneficial to search for information					
I get as much information as possible before making decision					

**SECTION C: ACCESSIBILITY AND UTILIZATION OF AGRICULTURAL INFORMATION FROM SOCIAL MEDIA**

1. How often do you access your social networking accounts? Tick where appropriate

	Hourly	Daily	Weekly	Monthly	Never
Facebook					
Twitter					
Whatsapp					
Youtube					
Google					
Linkedin					
Others					

2. How often do you use social media accounts to obtain agricultural information?

- a) Sometimes [ ]
- b) Frequently [ ]
- c) Rarely [ ]
- d) Never [ ]

3. Do you post queries on social media platforms?

- a) Yes [ ]
- b) No [ ]

4. Do you contribute to discussions on social media?

- a) Yes [ ]
- b) No [ ]

5. Do you share agricultural information on social media?

a) Yes [ ]

b) No [ ]

6. Does social media fulfill your information needs?

a) Yes [ ]

b) No [ ]

If No why?

.....  
.....  
.....

7. Do you prefer obtaining your agricultural information from social media over other channels?

a) Yes [ ]

b) No [ ]

8. If Yes why?

.....  
.....

9. What challenges do you encounter when trying to obtain information from social media?

.....  
.....

## **Appendix II: Interview Schedule**

1. Do farmers require agricultural information?
2. Do small holder farmers actively seek for information?
3. What kind of information do small holder farmers look for?
4. What services do extension officers provide farmers?
5. Are extension services readily available to small holder farmers in Kiambu?
6. Does lack of information hinder agricultural development?
7. Do you think the media an alternative for providing agricultural information?
8. In your opinion can farmers fully rely on the media for information if there are no extension services readily available?
9. What kind of information are farmers seeking from social media?
10. What is your opinion on the use of social media as a source of information?
11. What challenges face smallholder farmers when they are trying to obtain information?
12. What challenges do you think smallholder farmers encounter when obtaining information from social media platforms?

*Thank you for your cooperation*

Appendix III: Map of Kiambu County

