INFORMATION SEEKING BEHAVIOR OF AGRICULTURAL RESEARCHERS AND EXTENSION WORKERS IN SELECTED AGRICULTURAL INFORMATION CENTRES IN NAIROBI COUNTY, KENYA

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FEBRUARY, 2019
DECLARATION

Declaration by the Candidate
This research project is my original work and has not been submitted for any examination in any other institution for the award of a degree. The research report has been complemented by duly acknowledged reference sources. The sources have been explicitly cited and acknowledged through the current APA system in line with anti-plagiarism guidelines.

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DEDICATION

I dedicate this research project to my friends and loving family members who have supported and inspired me throughout this academic journey.
ACKNOWLEDGEMENT

My first and foremost gratitude goes to the Almighty God for His limitless grace and love which have brought me this far and to the end of this program. My unreserved gratitude is also to my selfless supervisor, Dr. J. R. Njuguna for his tireless guidance and encouragement during the preparation of this research report. Agricultural information centers and all staff members from the two institutions of Kenya Plant Health Inspectorate Service (KEPHIS) and Horticultural Crops Development Authority (HCDA) are equally acknowledged and appreciated for allowing me to undertake this research within their premises. Many thanks also go to my friends and family members for their invaluable support towards this project.
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ABBREVIATIONS AND ACRONYMS

AICs - Agricultural Information Centres
FAO - Food and Agriculture Organization
G.O.K - Government of Kenya
HCDA - Horticultural Crops Development Authority
ICIPE - International Centre of Insect Physiology and Ecology
ICRAF - International Council for Research in Agroforestry
JKIA - Jomo Kenyatta International Airport
KEPHIS - Kenya Plant Health Inspectorate Service
ABSTRACT

Kenya is currently facing food security issues and every effort is being made to increase agricultural productivity within the country. Agricultural researchers and extension workers are some of the stakeholders who are being looked upon to steer the country’s agricultural development. However, this kind of development cannot be achieved without leveraging on the proper management and use of information. There is need to adequately understand the information needs of these agricultural officers and their information seeking behavior in order to furnish them with timely and quality information. It is towards meeting this goal that this study was formulated to understand the information seeking behavior of agricultural researchers and extension officers within Nairobi County, Kenya. The research objectives were understanding of agricultural researchers’ and extension workers’ information seeking behavior, establishing their opinion on the quality of information resources in their information centers, extent to which they use agricultural information in their information centers, and identifying challenges they faced in the retrieval of agricultural information from their information centers.

Two of the major agricultural research agencies in Kenya, Kenya Plant Health Inspectorate Service (KEPHIS) and Horticultural Crops Development Authority (HCDA), were sampled as representative locations for the study. Additionally, four research objectives were proposed together with their corresponding questions in order to guide the entire research process. Suitable theoretical and conceptual frameworks were also developed from an extensive review of various literatures to help guide the researcher as well as widen his understanding of the research topic. A descriptive research design was selected as a suitable method through which the objectives of the research would be achieved. This methodology involved development and administration of semi-structured questionnaires to 97 sampled respondents. The collected data was analyzed quantitatively. The research used tables to present research findings in line with the pre-established research objectives. The study findings revealed impressive trends in the search and use of agricultural information resources among extension workers and agricultural researchers in the two sampled agencies. The two categories of agricultural information users were found to prefer agricultural information from electronic journals and organizations’ websites compared to print materials from public libraries and information centres. The need to overcome professional challenges and achieve professional growth was among the key reasons for searching information among the respondents. Majority of respondents were adequately aware of their information needs and also competent in articulation of their information needs. Additionally, information centres in the two agricultural research agencies were found to be performing quite well in terms of acquisition, management, and provision of information services to their users. However, some of the users were not satisfied with the current services being provided. Timely access to quality information stands out as one of the major challenges facing agricultural information users among other challenges. The study concluded that agricultural researchers and extension workers have impressive information seeking behavior and are adequately capable of retrieving information relevant to their needs. The study recommends that agricultural information centers undertake more information literacy training, improve on the quality and delivery of information services, increase their subscription to open access publications, and also enhance user-friendliness of their information management interface in order to enhance access and utilization of agricultural information among these categories of users. The study also suggests that a further study should be conducted among agricultural information centres in order to assess the operational environment and factors that may hinder their effective provision of quality information services.
CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction
This chapter introduces the background to the study, statement of the problem, the purpose of the study, study objectives, research questions, significance of the study, theoretical and conceptual frameworks of the study, and lastly operational definition of terms used in the study.

1.2 Background to the Study
Advancement of human capital through management and dissemination of quality information has become a priority of modern society especially in the current information economy. Every industry, including agriculture, is looking for the most efficient means through which any relevant information can be used to maximize their output. Agricultural researchers and extension workers are among key players in the agricultural industries. There is need to increase information and knowledge-base of these players in order to increase agricultural productivity across the globe. Brhane, Mammo and Negusse (2017) observed that agricultural sector is a very information-intensive industry whose success is dependent on availability and timely delivery of up-to-date agricultural knowledge and information. As such, understanding information seeking behavior of key players such as extension workers and agricultural researchers is paramount. In Kenya, extension workers and agricultural researchers have been known to adopt Information Communication Technology as one of their preferred information sharing platforms. Social media is gaining greater popularity among these agricultural professionals as well as among farmers. Gichamba et al. (2017) noted that the increasing ease with which agricultural professionals’ and farmers’ access ICT devices have catalyzed adoption of social media platforms as well as internet technology in the search and utilization of agricultural information.
Information seeking behavior is broadly defined by Kabir, Roy and Kuri (2014) as a set of actions taken by an individual in the expression of one’s information needs, seeking of the required information, evaluation and selection of the information, and finally using the information to satisfy the expressed information needs. The researchers pointed out that agricultural professionals should possess good information seeking behavior in order to improve agricultural productivity across the globe. The need for sound information seeking behavior among agricultural researchers and extension workers is also much evidenced in Kenya, especially in agricultural institutions such as Kenya Plant Health Inspectorate Service (KEPHIS) and Horticultural Crops Development Authority (HCDA).

Kenya Plant Health Inspectorate Service (KEPHIS) is a government parastatal body which is entrusted with a responsibility of enhancing quality of agricultural inputs and produce to avert adverse health, environmental and economic impacts of pests and diseases. KEPHIS fulfills this regulatory mandate by finding the most appropriate ways through which Kenyan agriculture can be protected against pests and diseases. The agency was established through the Plant Protection Act, (Cap 324) of 2009 with a mission of promoting sustainable development and food security by ensuring quality of agricultural inputs and produce. The mission of KEPHIS is “to provide science-based regulatory services and to ensure that standards for plant health issues, quality of agricultural inputs and produce are met (The Kenya Plant Health Inspectorate, Service Act, 2012). This contributes to food security and market access, and ultimately to economic development. KEPHIS’ activities range from coordination on issues of plant pests and diseases; seed certification; border inspections; chemical analysis of pesticide residues; quality of water, fertilizer and pesticides; education of stakeholders and setting of policies at the national and international levels. The corporation has 20 service offices across the country, especially at border points and the major agricultural production areas.
Horticultural Crops Development Authority (HCDA) is a state corporation that was established in 1967 through Legal Notice No. 229/1967 which was a subsidiary legislation of the 1967’s Agriculture Act, Cap 318. HCDA’s major role is to regulate Kenya’s horticultural sub-sector on behalf of the government. The agency’s goal is to campaign for the provision of quality, effective, and efficient horticultural services. It is mandated to regulate the horticulture industry through licensing and application of rules as prescribed under the Agriculture Act, Cap 318. It also provides advisory and marketing services to the stakeholders in the industry for planning purposes (Government of Kenya, 2012).

The era of HCDA’s formation was marked by great optimism at the horticultural sub-sector. It was regarded as a viable solution to the country’s economic challenges. It could lead to increased provision of raw material for agro-processing industries, diversification of cash crops, improved food nutrition, creation of employment opportunities, generation of more income and increased foreign exchange (G.O.K., 2012).

Initially, greater attention of HCDA was focused on small-scale farmers who could use their own labor in order to get higher returns from their limited land. As such, most of government policies have been directed at the horticultural sub-sector as signified by the development of a national horticultural policy. The policy outlines major policy interventions with the aim of revamping and repositioning the Kenyan horticultural sub-sector (G.O.K., 2012).

However, functions of HCDA have evolved over the years due to the changing policies of the government and dynamic demands of the sub-sector. Whereas the initial focus of the agency never involved policy regulations, the liberalization of this sub-sector has seen introduction of more responsibilities. Its initial focus was on developing, marketing, value-addition, opening up new production areas and markets on behalf of the farmers. However, the liberalization and reduced government involvement in direct trading have re-engineered HCDA’s role to include
regulation, promotion, coordination, development and facilitation of operations within the
country’s horticultural sub-sector. This is aimed at ensuring smooth production and marketing
environment and advocating for policies that favor investment and enhanced performance of the

According to Castells (2005: 76), information is a critical resource in the operation and
management of organizations. Timely availability of relevant information is vital for effective
performance of managerial functions such as planning, organizing, leading, and controlling. A
well-established and well-designed information system to facilitate decision making in various
agricultural development projects is critical to the success of any organization. Access to
information through libraries and information centres among others, enhances the timeliness and
quality of such information.

Agriculture is considered as a key ingredient to economic development the world over and
scientists have done a lot of research in this field. These researches have yielded tremendous
innovations leading to improved food production (Food and Agriculture Organization, 2010). In
most of the African countries, agriculture is the means of alleviating poverty whose incidence is
debilitating with conditions that are too dehumanizing (World Bank, 2015).

1.3 Statement of the Problem
Information is an important factor in sustaining the development of any society because it
reduces uncertainty and broadens the scope of options to take in solving problems. When people
are aware of where to get help, they usually go for it to solve their problem. There may be
government programs, even availability of international aid but without prompt provision of
information, people will not know about it. Information distribution is very key in the eradication
of poverty and hunger.
The need to increase agricultural productivity in Kenya has been an ongoing debate and has been discussed extensively by agricultural scholars across the country. Scholars such as Ojiambo (2009), Mohammadi (2002), and Zijp (2004) emphatically linked the country’s economic stability to the level of its food security. However, this kind of productivity cannot be achieved in Kenya without proper dissemination of quality information to Kenyan agricultural researchers and extension officers. Providers of agricultural information are therefore challenged to understand information seeking behavior of their patrons as a step towards ensuring prompt dissemination of quality agricultural information.

It is important to note that inadequate information has been availed in regard to the information seeking behavior among agricultural researchers and extension officers in Kenya. Ignorance about information seeking behavior among these officers could lead to loss of information between the agricultural centres and researchers which could even affect agricultural productivity due to poor information diffusion (Mohammadi, 2002). In view of the above, this study sought to establish information seeking behavior of researchers and extension workers in agricultural information centres in Nairobi County.

1.4 Purpose of the Study
The purpose of this study was to add to the existing knowledge on agricultural researchers’ and extension workers’ information seeking behavior. Such knowledge would enable agricultural information centres in Nairobi County, specifically at HCDA and KEPHIS to enhance their service delivery to these categories of users. The ultimate goal of the study was to enhance agricultural productivity across the Country through well-informed agricultural researchers and extension workers.
1.5 Objectives of the Study

The study aimed at achieving the following objectives:

1. To determine information seeking behaviour of agricultural researchers and extension workers in agricultural information centres in Nairobi County.

2. To establish agricultural researchers’ and extension workers' opinions on the availability of quality agricultural information disseminated by the agricultural information centres.

3. To evaluate the utilization of agricultural information resources by agricultural researchers and extension workers.

4. To identify the challenges faced by agricultural researchers and extension workers when retrieving information from the agricultural information centres.

1.6 Research Questions

The study was guided by the following questions: What are the information seeking behaviour among agricultural researchers and extension workers in the selected agricultural information centres?

1. What are the agricultural researchers’ and extension workers’ opinions on the availability of quality agricultural information disseminated by the agricultural information centres?

2. To what extent do the agricultural researchers and extension workers use agricultural information from their respective information centres?

3. What are the challenges faced by agricultural researchers and extension workers when retrieving information from the agricultural information centres?
1.7 Significance of the Study

The findings of this study are expected to be of benefit to agricultural researchers and extension workers, the Kenyan Government and policy makers, agricultural organizations and research institutes.

For the agricultural researchers and extension workers who are intermediaries between the farmers, research institutes and agricultural organizations, the findings of this study will review to them ways of packaging the information in a manner that will attract the use of their agricultural information services to meet the desired goals of the established institutions.

The study is also an eye opener and impetus to the agricultural information centres, information service providers to the rural farmers, to be more aggressive in carrying out the tasks at hand.

To the Government of Kenya and policy makers, the findings of this study have exposed the need for proper monitoring and implementation of their policies.

To the researchers in the related fields, the findings of this study will serve as a reference tool for further research in users’ information seeking behavior. The study has also suggested a suitable area for a follow-up research for effective delivery of agricultural information services.

To the field of librarianship and information science, this study has added invaluable knowledge on different information needs and information seeking patterns of agricultural researchers and extension workers to the existing literature. It is also helpful in identifying areas of information needs of researchers and extension workers and how the education and training of librarians and information specialists can be adapted to supply information that will meet the information needs of such users.
1.8 Limitations and Delimitation of the Study
The study was geographically limited to information seeking behavior of agricultural researchers and extension workers within KEPHIS and HCDA due to logistical impracticability of including all agricultural professionals across the country. However, the fact that the sampled agricultural information centres are within the head offices of key agricultural agencies makes the study findings fairly representative across the country. Additionally, the study mainly focused on the information seeking behavior exhibited by agricultural researchers and extension workers without looking into the factors that might have led to the formation of such behaviors. Contributors to the formation of information seeking behavior among agricultural researchers and extension workers were beyond the scope of this study.

1.9 Assumptions of the Study
The study was based on three main assumptions;

i) The sampled institutions would permit the researcher to collect data within their institutions.

ii) The sampled respondents would provide the researcher with accurate and honest information on the study topic.

iii) The study would achieve at least 75% response rate.

1.10 Theoretical Framework
Anfara and Mertz (2014) recommend that a sound undertaking of any research project should be founded and supported by established theories relevant to the topic of study. This section of theoretical framework reviews principle of least effort as a theoretical foundation upon which information seeking behavior of agricultural researchers and extension workers can be explored.
1.10.1 Principle of least effort

Principle of least effort is a human behavior theory that was fronted by George Kingsley Zipf in 1949 (Mann, 1993). In proposing the theory, Zipf observed that people often choose courses of action through which they expend the least probable effort (Mann, 1993). This means that an entity, individual, or organization prefers an easier approach to meet their goals at the least cost possible.

In reference to users’ information seeking behavior, the principle of least effort means that most researchers tend to adopt easily available information sources. Even though such sources can be objectively said to be of low quality, most researchers “will tend to be satisfied with whatever can be found easily in preference to pursuing high-quality sources whose use would require greater expenditure of effort” (Mann, 1993: 91). The implication of this theory is that information centres should strive to make quality resources easily available and accessible if their users are to make the optimal use of such information resources. As Mann (1993: 95) pointed out, the responsibility for quality researches rests with information managers because if their information retrieval systems readily avail only superficial sources, the quality of researches will really be jeopardized. In the spirit of expending the least information retrieval efforts, researchers at such information centres would be encouraged to base their studies on whatever sources which are readily available, regardless of the quality and completeness of the sources.

Mugwisi, Ocholla and Mostert (2013) contend that timely access to relevant information and proper management of such information are among the factors in determining effectiveness of any research system. It is therefore important to identify users’ information seeking behavior in order to boost quality agricultural researches across agricultural research agencies in Kenya.

1.11 Conceptual Framework

A conceptual framework is a basic layout of fundamental principles and ideas which are aimed at facilitating graphic presentation and structure of a study. Researchers often use conceptual frameworks as tools for enhancing understanding and awareness of the study topics. The framework is used by researchers in explaining the existing relationships among concerned independent and dependent variables (Kombo& Tromp, 2006). This study was conceptualized
within the independent-dependent variable components and their indicators as shown in figure 1.1.

**Independent Variables**

**Access to Agricultural Information Resources**
- Users’ understanding of their information needs
- Users’ articulation of their information needs
- Availability of quality information resources

**Use of Agricultural Information**
- Appropriate packaging of agricultural information
- Timely dissemination of information to the researchers and extension officers

**Dependent Variable**
**Productivity of Agricultural Researchers and Extension Officers**
- Faster making of quality decisions
- Faster response to agricultural challenges
- Regular provision of quality agricultural advice to stakeholders and policy makers

**Intervening Variables**
- Institutional policies
- Personal aggressiveness of agricultural researchers and extension workers
- Technological advancement
- Staff competencies

Figure 1.1: Conceptual Framework (Source: Researcher, 2018)

Productivity of agricultural researchers and extension officers was conceptualized as a product of two broad facets of the officers’ information seeking behavior. The facets include access and use of quality agricultural information. These two facets, plus their indicators, comprised the study’s independent variables while productivity level of agricultural researchers and extension officers
was conceptualized as the dependent variable. Information seeking behaviors of information users play critical roles in enhancing the officers’ professional productivity through prompt access to proper use of quality information. This kind of productivity can only be assured when the agricultural officers are able to accurately identify and articulate their information needs to the information managers with well-equipped agricultural information centres. Information providers within such information centres also have the responsibility of packaging the available information in a format that is easily consumable by the relevant users. Timely dissemination and usage of the information by the right users mark the final steps of ensuring increased productivity among extension officers and agricultural researchers.

The dependent variable (extension workers’ and researchers’ professional performance) was guided by the independent variables (access to and use of quality agricultural information). The independent variables determined how extension workers and researchers use the agricultural information centres. Extension workers and researchers need to access the available information, which is useful as per their needs in order to carry out their tasks efficiently.
1.12 Operational Definition of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Agricultural Agency</td>
<td>Legally established institution for the purpose of providing agricultural products, and/or services.</td>
</tr>
<tr>
<td>Agricultural Information Centre</td>
<td>An organizational unit tasked with the duty of managing and disseminating information within an agricultural research institute.</td>
</tr>
<tr>
<td>Agricultural Information System</td>
<td>An integration of people and machines working together towards efficient management and dissemination of agricultural information</td>
</tr>
<tr>
<td>Agricultural Researcher</td>
<td>A research scientist whose major concern is finding new knowledge in the areas of livestock rearing and crop improvement.</td>
</tr>
<tr>
<td>Extension Officer</td>
<td>Agricultural specialist tasked with the responsibility of mobilizing and training local farmers in best agricultural practices.</td>
</tr>
<tr>
<td>Information Seeking Behavior</td>
<td>Ways in which users identify and express their information needs, search, assess, select, and use relevant information</td>
</tr>
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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction
This chapter reviews relevant literature on current information seeking patterns of agricultural researchers and extension workers in agricultural information resource centres. It also covers availability, accessibility, quality and utilization of agricultural information centres by agricultural researchers and extension workers.

2.2 Agricultural Researchers’ and Extension Workers’ Information Seeking Behavior
Information seeking behavior refers to the tendencies exhibited by information users in their identification and articulation of their information needs as well as their search, evaluation, selection, and use of the information (Ruthven, 2011). It is an intentional search for specific information that is aimed at satisfying an identified need. The search for information may involve interaction with manual or computer-oriented information systems, and people (Wilson, 2000: 101). Pettigrew (1996) argues that behaviors exhibited by individuals during information search is often informed by personal reasons and preferences in terms of avenues and sources of the said information and the specific kind of the information in question (Pettigrew, 1996: 230). However, it is important to consider some of the barriers that might hinder users from effective search and retrieval of the required information. Understanding of such potential barriers is very instrumental towards overall understanding of individuals’ and organizations’ information-seeking behavior.

Users’ information needs and information seeking patterns are heavily influenced by their individual tasks within and outside the organization (Ingwersen, 1992; Belkin, Oddy, & Brooks, 1982a). As such, people’s information seeking patterns and their complexities vary from one task to the other. For instance, an individual involved in a complex task is likely to undergo multiple
information seeking processes compared to an individual with less complex tasks. Workers’ information needs increase with every increase in the complexity of the tasks performed. Complex tasks translate to multiple information needs which must be satisfied in steps. People’s information seeking process ends when each of the needs is satisfied and the tasks are completed satisfactorily. This end can be achieved within a single information seeking process for a simple task (Zhang, Wang & Duan, 2016).

However, when the need is not satisfied in the first process, it should be reformulated and refined for further search for appropriate information. Reformulation then initiates new information seeking actions to retrieved quality information necessary for effective completion of the task. However, the users are likely to interrupt the information seeking process whenever they feel incapable of retrieving the required information (Byström and Järvelin, 1995). Even though researchers are always involved in information-intensive tasks within information-rich environments, they often exhibit similar information-seeking patterns like other general information users. Extension officers and agricultural researchers are noted to prefer face-to-face and oral means of acquiring information for faster resolution of their information challenges. Accuracy of the information is often compromised in favor of speedy decision-making and resolution of the perceived challenge. However, such decisions often lack rationality due to the instability, uncertainty, and conflicts of inaccurate information. It is promising to note that such challenges are currently being addressed and structured by researchers’ and extension workers’ roles and activities, decision-making, and problem dimensions (Blackburn & Flaherty, 1994).

2.3 Availability of Quality Agricultural Information within Agricultural Information Centres

A report by Food and Agriculture Organization (FAO) revealed that 24 African countries face acute food crises (FAO, 2014). This disturbing level of food insecurity within the continent is
commonly attributed to lack of quality and timely dissemination and use of relevant agricultural information by users such as researchers, planners, policy makers, extension officers and farmers.

The current era of agricultural information management has been marked by increased focus on providing agricultural information to all agricultural information users. Minimal attention of agricultural libraries and information centres has been put in providing customized agricultural information to researchers and extension officers (Zhang, Wang & Duan, 2016). Improved agricultural production in African countries is therefore being hindered by this continued laxity in the provision of quality agricultural information to the relevant scientists.

It is noted that a country’s ability to provide its agricultural experts with quality information has a greater potential of increasing her agricultural production. Agriculture information centres should strive to furnish all researchers and extension officers with the required information as a way of reaching out to the farming community with effective and updated farming techniques (Zhang, Wang & Duan, 2016). Farmers’ sound market decision making, effective application of agricultural inputs, product pricing, soil, water, and vegetable resources conservation methods depend on the availability and timely dissemination of quality information.

More emphasis on the provision of quality agricultural information was laid by Ojiambo (2009), especially to the farmers residing in the rural areas. The author acknowledged that some effort has been made towards enriching farmers with quality information but very little success has been recorded since majority of farmers reside in the rural areas. Hence, the need to look into the possible ways of addressing problems of availability, accessibility and quality of the agricultural information disseminated in the agricultural information centres and use of such information by the research and extension workers in Kenya. Agricultural researchers and
extension officers stand at a privileged position through which the majority of farmers across the
country can be reached and informed on new agricultural developments. On the plight of rural
farmers, the Economic Commission for Africa attributed constrained planning and management
of rural development to the glaring lack of relevant data. Additional challenges facing farmers in
the rural areas include:

- Difficulty in accessing important information such as market prices of their produce,
  bulletins about pest infestations in an appropriate format and timely manner.

- Majority of available information for rural communities is in written form, hence hardly
  accessible to users with low, or no literacy skills.

- Rural communities and organisations have difficulty sharing information and experience
  among themselves beyond face-to-face contact.

- Researchers have poor access to current information from the field

- Field workers have little access to current research findings and even information about
  the populations they are serving.

- Inadequate information for Government officials for proper planning and decision
  making. Government officials also suffer lack of monitoring capabilities and inadequate
  financial control (Zijp, 2004).

2.4 Researchers’ and Extension Workers’ Utilization of Agricultural Information

Appropriate use of information is proving to be a fundamental pillar in the current information
age. Wilson (2000) argued that lack of people’s proper use of information is becoming more of a
challenge today than the production and storage of information. Every organization that is
dreaming of enhancing their operations and management must embrace information as one of its most critical resources. Organizations have recently embraced the value of timely delivery of quality information for their improved performance. All the managerial functions like organizing, planning, controlling, and leading are dependent on timely access to quality information by respective organization managers (Asadi, Rezaei & Rezvanfar, 2008).

In this regard, Kenyan agricultural sector should strive to appropriately design and establish a functional information system in order to further aggressive development of sound agricultural projects through well-informed decision making processes. Accurate and timely access to relevant information by decision makers is the most assured step towards managing an organization’s material and human resources efficiently. Malek-Mohammadi (2000) observed that both material and human resources should be managed efficiently for agricultural projects to be completed successfully. Every organization’s employee, especially those in the managerial positions, should be able to access quality information in order to make well-informed decisions.

The need for timely access to quality information is extremely important for the extension officers since they play an integral role in educating and informing farmers. Blackburn and Flaherty (1994) emphasized that extension institutions are greatly in need of reliable information flow compared to other organizations whose main role does not include provision of business-critical information to their clients.

The current era which is characterized by information explosion has entrusted agricultural institutions with the responsibility of advocating for aggressive information and knowledge use by subjecting its people to quality research activities. Extension services in the agricultural sector are heavily reliant on the quality exchange of information among all agricultural stakeholders, with major emphasis on farmers’ timely access to relevant information (Buford, 1990).
Agricultural research and extension services are often typically considered alongside agricultural education as vital public or private services that respond to farmers’ information needs towards improving their productivity, welfare, and financial incomes. The services also contribute to efficient and sustainable management of a country’s natural resources. Extension services have the advantage of equipping farmers with new technologies and relevant information for improving their living standards through increased production and incomes. Therefore, extension officers should always strive to enrich themselves with quality information for the purposes of adequately informing other agricultural players, including the farmers (Radhakrishna & Thomson, 1996).

2.5 Challenges in the Access of Agricultural Information by Agricultural Researchers and Extension Workers

Agricultural researchers and extension workers hold strategic positions within the agricultural production cycle as they mediate between agricultural policy makers and the farmers. Timely and accurate dissemination of quality information to this group of patrons can greatly enhance the quality of agricultural information they provide to policy makers and farmers. However, mere provision of information only to researchers and extension workers without availing the same information to farmers will negate suitable integration which is so much desired. According to Radhakrishna and Thomson (1996), the ratio of agricultural extension workers to that of farmers is far too small among African countries. Therefore, establishing the information needs of extension workers and agricultural researchers is crucial in saving their time when accessing information.

Since independence, Kenya’s economic growth has been principally driven by agriculture as it constitutes the country’s number one foreign exchange earner and creates higher employment
opportunities for the Kenyan population. The Kenya National Development Plan of 2008 – 2012 reported that, 82% of the country’s labor force was employed in the agricultural sector. The sector also contributed 64% and 27% of Kenya’s export earnings and Gross Domestic Product respectively. The agricultural sector also contributes to the improvement of the country’s security and off-farm employment which are some of the top concerns of every government (FAO, 2014).

From the above statistics, any attempt at increasing the level of agricultural growth is likely to improve the citizens’ living standards through enhanced foreign exchange earnings and increased employment opportunities. Nevertheless, national policy makers as well as all other stakeholders should recognize that such increased production in the agricultural sector demands greater infrastructural investments such as functional information systems and technological support to all farmers. Such support should include provision of quality seeds, extension and agricultural services in addition to credit facilities, mechanization services, animal health and plant protection services, drainage and irrigation initiatives (Zijp, 2004).

2.6 Summary and Literature Gaps
Literature reviewed above indicate considerable literature gap on extension workers’ and agricultural researchers’ information seeking patterns. Previous literature reviewed has focused mostly on farmers’ information needs. It is thus of great significance as the main purpose of this study was to focus on the information seeking patterns of agricultural researchers and extension workers in agricultural information centres so as to bridge the gap between the resource centres and their clientele.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction
This chapter aimed at describing and justifying the research design and methodology chosen for the study. Specific attention of this chapter was on the research design, location of the study, target population, sampling techniques, sample size, research instruments, validity and reliability, data analysis, and ethical and logistical considerations.

3.2 Research Design
Mugenda (2008) defined research design as an investigation plan, structure and strategy established to guide the entire research process in answering the research questions. This study adopted a descriptive research design. The design facilitates effective evaluation of practices, processes, structures, or conditions for a vivid presentation of prevailing trends or opinions (Saunders, Lewis & Thornhill, 2009: 16). Mugenda (2008) pointed out that descriptive survey design mainly aims at describing the situation or population’s characteristics. As such, descriptive survey design was considered most appropriate for undertaking this study since it would facilitate in-depth study and gathering of comprehensive data to explore and describe the information seeking behaviour of researchers and extension workers.

3.2.1 Study variables
The study was conceptualised under two broad independent variables, one dependent variable and four intervening variables. The independent variables included agricultural researchers’ and extension workers’ access to agricultural information as well as their use of the same. On the other, productivity of agricultural researchers and extension workers was proposed as the dependent variable. The intervening variables included institutional policies, agricultural
researchers’ and extension workers’ personal aggressiveness, technological advancement, and competencies of staff members within agricultural information centers.

3.3 Location of the Study
The study was conducted in the headquarters of two main agricultural agencies located in Nairobi County, Kenya. The agencies were Kenya Plant Health Inspectorate Service (KEPHIS), headquartered in Karen, and Horticultural Crops Development Authority (HCDA) whose main offices are located next to JomoKenyatta International Airpot (JKIA). The two agricultural agencies were selected for the study because they house the head offices of the two major agricultural institutions within Nairobi County.

3.4 Target Population
The target population for the study was 320 agricultural researchers and extension workers from KEPHIS and HCDA. Agricultural researchers and extension workers are agricultural practitioners whose main duties are to undertake solution-based studies in the Kenyan agricultural industry. As such, the researchers and extension workers determine the level of agricultural productivity in Kenya.

3.5 Sampling Techniques and Sample Size
The researcher employed multi-stage sampling technique in which both purposive sampling technique and simple random sampling were used. The first stage of sampling involved purposively selecting researchers and extension officers from the general workforce of the two sampled institutions. Thereafter, researcher randomly sampled 30 percent of all agricultural researchers and extension workers from KEPHIS and HCDA to participate in the study as indicated in Table 3.1. According to sampling recommendation by Mugenda (2008: 68), 30% of the total population is usually an acceptable sample size for a social science research.
The researcher also based the study’s sample size on Neuman’s recommendation of a relatively large sample size as a means of ensuring research’s external validity (Neuman, 2011). Since the study’s target population was below 500 people, a sampling ratio of 97 agricultural researchers and extension workers representing 30 percent was appropriate.

Table 3.1 shows the numbers of respondents who were sampled for the study from the total number of agricultural researchers and extension workers in the two sampled agricultural institutions.

Table 3.1: Target Population and Sample Size

<table>
<thead>
<tr>
<th>Agricultural Institutions</th>
<th>Total population in each category</th>
<th>Sample</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEPHIS HQ Information Centre</td>
<td>Researchers</td>
<td>103</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Extension workers</td>
<td>86</td>
<td>26</td>
</tr>
<tr>
<td>HCDA HQ Resource Centre</td>
<td>Researchers</td>
<td>72</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Extension workers</td>
<td>59</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>320</td>
<td>97</td>
</tr>
</tbody>
</table>


3.6 Research Instruments

The researcher employed semi-structured questionnaires with predetermined questions to collect data from the entire 97 sampled respondents. This questionnaire had both open and close-ended questions in three sections. Section A was about demographic information of the respondents; section B was concerned with information on information seeking patterns of the respondents, while section C concentrated on respondents’ suggestions for improving their ability to access and use of agricultural research. The close ended questions were appropriate since they provided
respondents with possible alternatives from which they selected the option which best described their position. Additionally, close-ended questions were preferred to open ended questions due to the ease of analyzing them. On the other hand, open-ended questions were equally useful as they offered respondents the freedom to express their personal opinions on their own terms.

3.7 Pilot study

The researcher conducted a pilot study at International Centre of Insect Physiology and Ecology (ICIPE) resource center for the purpose of pre-testing the data collection instruments to ensure their suitability and reliability for collection of the required data. The researcher then carefully studied the responses from the pilot study so as to modify the instruments where necessary.

3.7.1 Validity

Logical validity and content validity criteria were used to establish the suitability of the instruments for the study prior to their use. Logical validity is the degree to which all study facets are represented in the research instrument (Kothari, 2004). Content validity, on the other hand, measures the extent to which the content of data collection instrument corresponds to the content of what it is designed to measure.

To validate the questionnaires, a dichotomous scale was used with categorical options to evaluate the extent to which the questions were objectively structured. The evaluation was done during the piloting stage of the study. Data collected within the piloting stage was analysed by the use of Cohen’s Kappa Index in order to determine the instrument’s validity. The resulting Kappa Index of 0.721 indicated that the questionnaire was objectively structured and adequately capable of measuring the intended topic of the study.
3.7.2 Reliability

According to Amin (2005), reliability is the degree to which the instrument consistently measures the research variables. He further defines reliability as the consistency of the results obtained from a similar study, among the same population over time. Cronbach alpha was used to determine the instruments’ reliability through a test-retest method. The research questionnaires were administered twice to the same group of agricultural researchers at ICIPE in a span of two weeks after which scores from the two sessions were quantitatively compared to ascertain reliability of the instruments. The research questionnaire was considered to be adequately reliable after a comparison of scores from the two tests yielded a Cronbach alpha of 0.73.

3.8 Data Collection Procedure

An introductory letter to the respondents was obtained from Kenyatta University while a research permit was obtained from National Council of Science, Technology and Innovation (NACOSTI). Armed with these documents, the researcher booked appointments with the respondents for actual data collection through physical administration of the questionnaires. Thereafter, the researcher distributed the pretested questionnaires to each of the sampled respondent at KEPHIS and HCDA. The researcher ensured that all the respondents were furnished with a comprehensive explanation of the study objectives and specific research questions to facilitate gathering of the most relevant data. Completed questionnaires were collected within one week of distribution for coding and data analysis by the researcher.

3.9 Data Analysis

The collected data was analysed using quantitative methods. Quantitative analysis was used to empirically investigate the research topic and present quantifiable relationships between dependent and independent variables. The responses to the open-ended questions were
appropriately clustered to facilitate clear interpretation. Responses from closed-ended questions were coded and entered into Statistical Package for Social Sciences (SPSS) for various analyses and generation of respective frequencies and percentages. The researcher used tables to present research findings in line with the pre-established research objectives.

3.10 Ethical Considerations
Before collecting data, validity and reliability of all data collection instruments were established through piloting to facilitate generation of most appropriate information for the study. Additionally, the required clearance and permission were obtained from relevant authorities in the prescribed format. The researcher also ensured that all respondents were adequately informed and allowed to freely express their consent or disapproval before being involved in the study either through interview or questionnaires. The purpose of the study was clearly stated and explained to the participants in addition to expressed respect of respondents’ confidentiality and anonymity. The researcher endeavoured to maintain the research integrity by adhering to honest and objective presentation of research findings without any kind of malicious manipulation. The researcher ultimately ensured that study results were used for the intended purpose only. Additionally, the researcher ensured that all consulted sources during the study were appropriately acknowledged.
CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

4.1 Introduction

Findings from the analysed data are presented in this chapter in form of tables and text. Statistical Package for Social Science (SPSS) was very instrumental in carrying out both qualitative and quantitative data analysis whose results are contained in the following sections of this chapter. The findings are presented according to the study objectives in order to maintain logical understanding of information seeking behaviour of agricultural researchers and extension workers in the sampled agricultural information centres.

4.2 Response Rate

The researcher distributed a total of 97 questionnaires to the sampled agricultural researchers and extension workers who made up the sample size explained in section 3.5 of this project. However, some of the respondents failed to adequately complete and submit their questionnaires to the researcher for data analysis. The researcher tabulated the number of questionnaires that were adequately completed and analysed against the total number of questionnaires which were distributed to the respondents. Table 4.1 shows the study’s response rate.

<table>
<thead>
<tr>
<th>Table 4.1: Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
</tr>
<tr>
<td>Questionnaires administered</td>
</tr>
<tr>
<td>Questionnaires received back</td>
</tr>
</tbody>
</table>

Source: Researcher, 2018

A total of 83 adequately completed questionnaires out of the 97 which were distributed to the study respondents were received and analysed by the researcher. The statistics tabulated in Table 4.1 indicate a response rate of 85.6%. This indicates favourable response rate since it is well above the recommended 75% (Fan & Yan, 2010).
4.3 Respondents’ Demographic Analysis

4.3.1 Respondents’ distribution by specialization

The researcher sought to establish the actual composition of the research respondents by their areas of specialization. It was important to understand the number of both agricultural researchers and extension workers who took part in this study since they work in different institutions. Their specialization is likely to influence their information needs and information seeking behavior. Table 4.2 shows the composition of the study respondents by their areas of specialization.

Table 4.2: Respondents' Distribution by Specialization

<table>
<thead>
<tr>
<th>Specialization</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers</td>
<td>46</td>
<td>55.4</td>
</tr>
<tr>
<td>Extension officers</td>
<td>37</td>
<td>44.6</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Among the 83 respondents, 46 of them representing 55.4% were agricultural researchers while 37 were extension officers accounting for 44.6% of the total respondents as shown in Table 4.2. From these results, it is obvious that more agricultural researchers took part in the study than the extension officers. A major explanation for this parity is that the sampled agricultural institutions have more agricultural researchers than extension workers. The parity is confirmed in Table 3.1 which includes sample size of this study.

4.3.2 Respondents per Institution

It was equally important to establish the number of respondents from each of the two agricultural institutions. Information management policy and culture tend to differ from one institution to the other. Understanding institutional representation of the respondents facilitated effective
contextualization of the study findings. Table 4.3 shows distribution of the study respondents by their respective institutions.

**Table 4.3: Respondents per Institution**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCDA</td>
<td>31</td>
<td>37.3</td>
</tr>
<tr>
<td>KEPHIS</td>
<td>52</td>
<td>62.7</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Source: Field data (2018)**

According to Table 4.3, there were 52 respondents from Kenya Plant Health Inspectorate Service (KEPHIS) accounting for 62.7% of the total number of respondents while 31 respondents representing 37.3% of the same were from Horticultural Crops Development Authority (HCDA). Findings in this Table should be read alongside those in Table 3.1 which indicate that KEPHIS has more agricultural researchers and extension workers than HCDA. Therefore, it is statistically permissible to have more respondents from an institution with a higher population than another institution with a lower population.

### 4.3.3 Respondents' distribution by years of experience

The respondents’ years of experience in their respective fields was considered as an important factor that might influence their information seeking behaviour. Table 4.4 presents analysed distribution of the respondents by the number of years they had been involved in agricultural research and extension work.
Table 4.4: Respondents’ Distribution by Years of Experience

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>0-1 Year</td>
<td>8</td>
</tr>
<tr>
<td>1-2 Years</td>
<td>10</td>
</tr>
<tr>
<td>2-5 Years</td>
<td>29</td>
</tr>
<tr>
<td>5-10 Years</td>
<td>23</td>
</tr>
<tr>
<td>Over 10 Years</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

According to Table 4.4, most of the respondents had worked in their respective professions for a period of two to ten years. Twenty-nine of the respondents representing 35.3% and twenty three representing 27.5% of the same had work experience of two to five and five to ten years respectively. The multiple number of years which the respondents had been practising agricultural research and extension work qualified them as dependable informants for this study. Only eight respondents accounting for 9.8% had less than one year of experience in their professional practice.

4.4 Respondents’ Information Seeking Behavior

Respondents’ information seeking behavior was gauged on four main dimensions. The dimensions included their awareness of relevant information sources, preferred sources of agricultural information, perception of agricultural information centers’ user-friendliness, and frequency in which they found relevant agricultural information.
4.4.1 Respondents’ awareness of relevant information sources

Information users’ awareness of relevant sources of relevant information is a key component of information literacy necessary for effective retrieval and use of the information. The researcher therefore sought to establish whether respondents were aware of where to find relevant information for their information needs. Tabulation of the study’s findings on agricultural researchers’ and extension officers’ awareness of relevant information sources is presented in Table 4.5.

Table 4.5: Respondents’ Awareness of Relevant Information Sources

<table>
<thead>
<tr>
<th>Respondents’ Population</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>83</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

As shown in Table 4.5, all the 83 respondents included in the study indicated that they knew where to find relevant information for their needs. The findings paint an encouraging picture on the level of agricultural researchers’ and extension workers’ information awareness. Information users’ ability to identify appropriate sources of information is a key step towards effective information search and access.

4.4.2 Preferred sources of agricultural information

It was also important for the researcher to establish agricultural researchers’ and extension workers’ preferred sources of agricultural information. The preferential status of the information sources was established by looking at the extent to which such sources were valued by the respondents. Understanding the value which information users attached to any piece of
information would determine the degree of diligence such users would put in the search for the information. Users are likely to be more diligent while searching for information perceived as being more valuable than the less valuable information. Table 4.6 shows the percentage of respondents in respect to the value they attached to information from different sources.

Table 4.6: Value of Information From Various Sources

<table>
<thead>
<tr>
<th>Value of Information</th>
<th>Public Library</th>
<th>Information Center</th>
<th>Electronic Journals</th>
<th>Organizations’ Websites</th>
<th>Social Media</th>
<th>Friends</th>
<th>Colleagues</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely useful</td>
<td>7.8</td>
<td>17.6</td>
<td>25.0</td>
<td>31.4</td>
<td>13.7</td>
<td>5.9</td>
<td>9.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Very useful</td>
<td>35.3</td>
<td>56.9</td>
<td>43.7</td>
<td>43.1</td>
<td>21.6</td>
<td>31.4</td>
<td>35.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Useful</td>
<td>41.2</td>
<td>23.5</td>
<td>31.3</td>
<td>21.6</td>
<td>51.0</td>
<td>45.1</td>
<td>47.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Not useful</td>
<td>11.8</td>
<td>2.0</td>
<td>0.0</td>
<td>3.9</td>
<td>13.7</td>
<td>15.7</td>
<td>5.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Not sure</td>
<td>3.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total Population (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

According to Table 4.6, majority of the respondents found information from electronic journals, their organizations’ websites and information centres to be more useful than from other sources such as public libraries, friends, social media, and colleagues. For instance, 26 respondents representing 31.4% of the respondents pointed out that Information from their organization’s websites to be extremely useful, while three accounting for 3.9% of the respondents reported that information from the websites was not useful to them. However, another three representing 3.9% and two accounting for 2% of the respondents were not sure of the value of information from public libraries and friends respectively. The findings are in line with observation by Bhat,Ganaie andRather (2015) on the preferential status of electronic information among 21st century information users. Therefore agricultural information centers should consider improving
their infrastructure to ensure improved online access to electronic information as recommended
by Bhat, Ganaieand Rather (2015).

4.4.3 Respondents’ perception of agricultural information centers’ User-friendliness
Information users’ behavior is also influenced by how user-friendly they perceive their
information centers to be. It is for this reason that the researcher requested the study respondents
to indicate the level of their information centres’ user-friendliness. Table 4.7 presents the study’s
findings on the level of user-friendliness of the two sampled agricultural information centres.

Table 4.7: Perceived User-Friendliness of Information Centres

<table>
<thead>
<tr>
<th>Level of Information Centres’ User-friendliness</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Exceedingly user-friendly</td>
<td>11</td>
</tr>
<tr>
<td>Very user-friendly</td>
<td>29</td>
</tr>
<tr>
<td>User-friendly</td>
<td>29</td>
</tr>
<tr>
<td>Fairly user-friendly</td>
<td>10</td>
</tr>
<tr>
<td>Somewhat user-friendly</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Agricultural information centres are friendly to the users as confirmed by the majority of the
respondents as presented in Table 4.7. Whereas 11 respondents representing 13.7% of the
sampled respondents acknowledged that their respective information centres were extremely
friendly to the users, 29 respondents representing 35.3% of the sampled agricultural researchers and extension workers reported that the centres were very user-friendly. Another 10 respondents accounting for 11.8% of the total sampled agricultural researchers and extension workers reported that their information centres were fairly user-friendly. However, four respondents accounting for 3.9% of the respondents indicated that their information centres were somewhat user-friendly. Therefore, it can generally be concluded that agricultural information centres are friendly to their users.

4.4.4 Frequency of finding relevant information

After establishing whether respondents were aware of where to find relevant information, it was necessary for the researcher to establish how often the respondents found information relevant to their needs. The respondents were therefore asked to specify the frequency of retrieving information relevant to their needs. Table 4.8 shows the respondents’ feedback on this question.

Table 4.8: Respondents’ Frequency of Finding Relevant Information

<table>
<thead>
<tr>
<th>Frequency of Finding Relevant Information</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Always</td>
<td>8</td>
</tr>
<tr>
<td>Very often</td>
<td>28</td>
</tr>
<tr>
<td>Often</td>
<td>32</td>
</tr>
<tr>
<td>Sometimes</td>
<td>13</td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Table 4.8 shows that majority of the respondents were able to access information relevant to their needs quite frequently while only two representing 2.4% of the respondents reported to have
never accessed information relevant to their needs. Thirty-two respondents accounting for 38.6% and 28 respondents representing 33.7% of total respondents acknowledged that they accessed relevant information to their needs “often” and “very often” respectively. Additionally, 13 respondents accounting for 15.7% indicated that they sometimes accessed information relevant to their needs. These findings confirm the impressive level of information literacy of the sampled agricultural researchers and extension workers as established in the preceding sections of this chapter. Their ability to retrieve relevant information can partly be attributed to their understanding of their information needs, ability to articulate the identified needs, and their awareness of relevant sources of the required information.

4.5 Availability of Quality Information Services in the Agricultural Information Centres

Quality of information center services was measured on the basis of the agricultural information centres’ understanding of information needs of their users, availability of relevant information resources, suitability of packaging of information, timely delivery of relevant information, frequency of service delivery surveys, and frequency of literacy training programs.

4.5.1 Understanding users’ information needs by agricultural information centres

Information centres of any kind are primarily tasked with the responsibility of acquiring, processing, and disseminating quality information which is relevant to the information needs of all users. Therefore, agricultural information centres should be able to understand information needs of their users in order to provide quality and relevant information. It is for this reason that the researcher sought to establish the extent to which the sampled agricultural information centres understood information needs of their agricultural researchers and extension workers. Table 4.9 shows information centers’ understanding of information needs of their users.
Table 4.9: Information Centers’ Understanding of Information Needs of the Users

| Information Center Understands the Information Needs of the Users | Respondents’ Population |
|---|---|---|
| | Frequency | Percent |
| Strongly agree | 26 | 31.4 |
| Agree | 50 | 60.2 |
| Disagree | 5 | 6.0 |
| Strongly disagree | 2 | 2.4 |
| Total | 83 | 100 |

Source: Field data (2018)

Majority of the respondents reported that their information centres adequately understood their information needs. Table 4.9 shows that 50 respondents representing 60.2% and 26 respondents accounting for 31.4% “agreed” and “strongly agreed” respectively that their information centres understood their information needs. However, five respondents accounting for 6.0%, and two accounting for 2.4% of the sampled respondents “disagreed” and “strongly disagreed” respectively that their information centres understood their information needs.

4.5.2 Relevance of information resources in agricultural information centres

Respondents were asked to indicate whether their agricultural information centres had information resources that were relevant to their needs. Their responses are presented in Table 4.10.
Table 4.1: Relevance of Information Resources in the Agricultural Information Centre

<table>
<thead>
<tr>
<th>Information Centre has Relevant Information Resources</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>20</td>
</tr>
<tr>
<td>Agree</td>
<td>60</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Provision of quality information resources is a critical role of all information centre managers towards meeting information needs of their users. Therefore, agricultural information centres are expected to acquire and process any kind of information necessary for completion of agricultural functions such as research and extension work. Data in Table 4.1 indicates that the sampled agricultural information centres possess quality information resources. Sixty respondents accounting for 72.3% and 20 representing 24.1% of the respondents “agreed” and “strongly agreed” that their information centres possessed relevant information resources. However, three respondents accounting for 3.6% of all respondents disagreed with the statement that their information centres possessed quality information resources. The findings indicate that sampled agricultural information centres are meeting information needs of most of their users. However, they should widen the scope of their user-needs surveys in order to capture information needs of all the users.

4.5.3 Packaging of agricultural information by the information centres

Proper packaging of information is equally important as packaging of tangible products. Information providers are required to understand their users and repackaging any relevant information in a format that is suitable to different categories of users. For instance, information
that is relevant to a visually challenged library user should be recorded in an audio or any other format usable to the visually challenged patrons. Thus, the researcher sought to establish whether the sampled agricultural information centres packaged their information in a usable format for their users. Table 4.11 presents respondents’ opinions on the packaging of agricultural information in their respective information centres.

Table 4.11: Information Center Packages Information in Usable Format

<table>
<thead>
<tr>
<th>Information Center Packages Information in Usable Format</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>12</td>
</tr>
<tr>
<td>Agree</td>
<td>63</td>
</tr>
<tr>
<td>Disagree</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Most of the respondents are in agreement that their respective information centres package relevant information in a format that is usable to the users. As shown in Table 4.11, 63 and 12 respondents representing 76.5% and 13.7% of all the respondents respectively agree and strongly agree with the statement that their information centres packaged information in a format usable to them. However, eight respondents representing 9.8% did not agree with the statement that their information centres packaged information in a usable format. It can therefore be concluded that the information centers generally package information in usable formats for their users.

4.5.4 Timely delivery of quality information by the Agricultural Information Centres

In an effort to establish extension workers’ and agricultural researchers’ opinions on the availability of the agricultural information disseminated by the agricultural information centres, the researcher asked respondents to indicate whether their information centres provided them
with timely and quality information. Table 4.12 shows respondents’ agreement or disagreement with the statement that their information centres delivered quality information in a timely manner.

Table 4.12: Timely Delivery of Quality Agricultural Information

<table>
<thead>
<tr>
<th>Information Centres Provide Timely and Quality Information</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>20</td>
</tr>
<tr>
<td>Agree</td>
<td>53</td>
</tr>
<tr>
<td>Disagree</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

The sampled agricultural information centres were rated by majority of the respondents as providing quality information to the users in a timely manner. Fifty-three respondents representing 64.7% and 20 respondents accounting for 23.5% “agreed” and “strongly agreed” that their respective information centres provided quality and timely information to the users. However, ten respondents accounting for 11.8% of the respondents disagreed with the statement that their information centres provided quality and timely information. In line with these findings, it can be conclusively stated that agricultural information centres provide quality information to their users in a timely manner.

4.5.5 Regular service delivery surveys by agricultural information centres

User-centered information centres are usually expected to undertake regular service surveys as a means of ensuring continuous provision of quality information to their users. Therefore, the researcher sought to establish whether the sampled agricultural information centres carried out
service delivery surveys on a regular basis. Respondents’ opinions on this matter are contained in Table 4.13.

**Table 4.13: Regular Service Delivery Surveys by Agricultural Information Centres**

<table>
<thead>
<tr>
<th>Information Centres do Regular Service Delivery Surveys</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>15</td>
</tr>
<tr>
<td>Agree</td>
<td>55</td>
</tr>
<tr>
<td>Disagree</td>
<td>10</td>
</tr>
<tr>
<td>Don't know</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

**Source: Field data (2018)**

Most of the sampled agricultural researchers and extension officers indicated that their information centres undertook regular service delivery surveys. As shown in Table 4.13, 55 respondents accounting for 66.7% agreed that their information centres carried out regular service delivery surveys, while 15 respondents representing 17.6% of the respondents expressed strong agreement with the same statement. However, ten of the respondents accounting for 11.8% of the respondents did not agree with the statement that their information centres carry out service delivery surveys on a regular basis. Another three respondents representing 3.9% of the sampled agricultural researchers and extension officers were not aware whether their information centres carried out regular service delivery surveys. These findings paint a picture of partial engagement of agricultural information users during service delivery surveys in the sampled information centres. Some users were never involved in any of service delivery survey.
4.5.6 Regular information literacy training by the agricultural information centres

In order to understand commitment of agricultural information centres towards empowering their users, respondents were asked to indicate information literacy practices of their respective information centres. Table 4.14 shows respondents’ opinions on whether their information centres undertake regular information literacy training.

Table 4.14: Information Centres do Regular Information Literacy Training

<table>
<thead>
<tr>
<th>Information Centres Do Regular Information Literacy Training</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>10</td>
</tr>
<tr>
<td>Agree</td>
<td>44</td>
</tr>
<tr>
<td>Disagree</td>
<td>21</td>
</tr>
<tr>
<td>Don't know</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

From Table 4.14, it is clear that 44 respondents accounting for 52.9% of the respondents “agreed” that their information centres undertook regular information literacy training sessions while ten representing 11.8% of total respondents expressed strong agreement with the statement that their information centres conduct regular training on information literacy. However, 21 respondents representing 25.5% and eight others accounting for 9.8% of the respondents disagreed with the statement and did not even know about the training respectively. This may be interpreted to mean that regular information literacy training was carried out in some information centres while this did not take place in some of the centres.
4.6 Respondents’ Utilization of Agricultural Information

Utilization of agricultural information by agricultural researchers and extension workers was considered from three perspectives. These included the respondents’ reasons for searching agricultural information, their perceived influence of quality agricultural information on their professional performance, and level of their satisfaction with current agricultural information in their respective information centers.

4.6.1 Reasons for information searching

The researcher sought to establish the reasons for searching information among agricultural researchers and extension workers. Getting to understand major reasons for information is a key step towards understanding the overall information seeking behavior among the users. Information seeking behavior of an individual is basically informed by the reasons for the information search. Table 4.15 shows an analysis of the respondents’ main reasons for their information search.

Table 4.15: Respondents’ Reasons for Information Searching

<table>
<thead>
<tr>
<th>Reasons for Searching Information</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Solve professional problems</td>
<td>34</td>
</tr>
<tr>
<td>Professional growth</td>
<td>39</td>
</tr>
<tr>
<td>Personal growth</td>
<td>8</td>
</tr>
<tr>
<td>Solve personal problems</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
</tr>
</tbody>
</table>

Source: Field data (2018)

According to responses given in Table 4.15, the sampled agricultural researchers and extension workers mainly sought information to solve personal problems, facilitate personal and
professional growth, and to solve professional problems. Thirty-nine respondents accounting for 47.1% of the sampled agricultural researchers and extension workers reported that their main reason for seeking information was to enhance their professional growth while 34 respondents representing 41.2% of total respondents pointed out at professional problems as their major reasons for seeking information. Desire for personal growth and push to solve personal problems are the least of reasons for searching information among the sampled agricultural researchers and extension workers. Only two respondents cited “quest to solve personal problems while eight cited desire for personal growth” respectively. The figures account for 2% and 9.8% of the sampled respondents. Librarians or managers of the sampled agricultural information centres should therefore put more effort on identifying specific professional challenges of their clientele and subsequently acquire relevant information materials to facilitate professional growth of the patrons.

4.6.2 Perceived influence of quality information on respondents’ professional performance

Respondents were also asked to indicate whether they thought their professional performance would improve if they were provided with quality agricultural information. Researchers question on possible impact of quality information was informed by the high costs associated with acquisition and delivery of quality information. It was therefore important to ascertain whether there was any impact of such a costly venture on the overall performance of the agricultural researchers and extension workers. Table 4.16 shows respondents’ level of agreement or disagreement with the statement that provision of quality agricultural information impacted positively on their professional performance.
**Table 4.16: Quality Information Increases Professional Performance**

<table>
<thead>
<tr>
<th>Quality Information Increases Professional Performance</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>46</td>
</tr>
<tr>
<td>Agree</td>
<td>37</td>
</tr>
<tr>
<td>Disagree</td>
<td>0</td>
</tr>
<tr>
<td>Don't know</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

**Source: Field data (2018)**

A total 37 respondents accounting for 45.1% agreed with the statement that their professional performance would increase if they were provided with quality agricultural information while 46 others representing 54.9% of all respondents “strongly agreed” with the same statement. It is also important to note that none of the respondents either disagreed or did not know whether improving quality of agricultural information would increase their professional performance. It can therefore be concluded that quality information increases professional performance of the information users.

**4.6.3: Level of satisfaction with current information services**

In order to assess the effectiveness of agricultural researchers’ and extension workers’ information seeking behavior, it was important to understand the level to which current information services have satisfied their information needs. The researcher requested respondents to rate their levels of satisfaction with the current information services being provided in their respective information centres. Table 4.17 shows different levels of user-satisfaction as expressed by the respondents.
Table 4.1: Respondents’ Level of Satisfaction With Current Information Services

<table>
<thead>
<tr>
<th>Level of Satisfaction with Current Information Services</th>
<th>Respondents’ Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Exceedingly satisfied</td>
<td>11</td>
</tr>
<tr>
<td>Very satisfied</td>
<td>23</td>
</tr>
<tr>
<td>Satisfied</td>
<td>31</td>
</tr>
<tr>
<td>Fairly satisfied</td>
<td>15</td>
</tr>
<tr>
<td>Not satisfied</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Majority of the sampled respondents expressed impressive level of satisfaction with the current information services being provided by their respective agricultural information centres. A total of 31 respondents representing 37.3% of the respondents were satisfied with the agricultural information services they received from their information centres, while 23 and 11 respondents accounting for 27.5% and 13.7% of the total respondents respectively were very satisfied and extremely satisfied with services from their respective information centres. However, three respondents accounting for 3.9% of the sampled respondents were not satisfied with the agricultural information services they received from their information centres. It is also encouraging to note that 15 respondents who represented 17.6% of all the sampled respondents were fairly satisfied with services from their information centres. It is therefore reasonable to conclude that the sampled agricultural information centres are meeting information needs of their patrons.
4.7 Common Challenges Faced During Information Retrieval

The fourth objective of this study was to identify common challenges faced by extension workers and agricultural researchers when retrieving information in the agricultural information centres. Table 4.18 presents five information retrieval challenges which were common among majority of the respondents.

Table 4.18: Common Challenges During Information Retrieval

<table>
<thead>
<tr>
<th>Challenges Faced During Information Retrieval</th>
<th>Respondents’ Population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Retrieving quality information is time consuming</td>
<td>29</td>
<td>35.3</td>
</tr>
<tr>
<td>Retrieval of irrelevant information</td>
<td>18</td>
<td>21.6</td>
</tr>
<tr>
<td>Difficulty in accessing quality information</td>
<td>21</td>
<td>25.5</td>
</tr>
<tr>
<td>Quality information is very costly</td>
<td>13</td>
<td>15.7</td>
</tr>
<tr>
<td>Unfriendly information retrieval system</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>83</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field data (2018)

According to the sampled respondents, agricultural researchers and extension officers faced various challenges during information retrieval. The higher amount of time spent in retrieving quality information was a key challenge faced by 29 respondents representing 35.3% of the sampled agricultural researchers and extension workers. The second most common challenge among the respondents was the difficulty of accessing quality information as cited by 21 respondents accounting for 25.5%. Retrieval of irrelevant information was also cited as a challenge by 18 respondents representing 21.6%. Other challenges included cost of retrieving
quality information and the unfriendly nature of the information system interface as pointed out by 13 and two respondents accounting for 15.7% and 2% of the total respondents respectively.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study findings, conclusions and recommendations in accordance with the previously mentioned objectives of the study.

5.2 Summary of the Findings

5.2.1 Background information

The study findings reveal impressive trends in the search and use of agricultural information resources among extension workers and agricultural researchers in the two sampled agencies. The information users are adequately aware of their information needs and are also competent in articulation of their information needs and search for the required information. One of the key findings of this study is the preferred status of electronic information resources among agricultural researchers and extension workers. These users tend to value electronic information from electronic journals and organizations’ websites compared to print materials from public libraries and information centres.

The study also established that majority of the agricultural information users are adequately aware of their information needs. Desire for professional growth and solving professional problems were among the main reasons for the users’ information search. Ten percent of the agricultural researchers and extension workers sought agricultural information principally to solve personal problems and pursue personal growth. Agricultural information centres in the two agricultural research agencies are performing quite well in terms of acquisition, management, and provision of information services to their users. However, some of the users are not satisfied
with the current services being provided. Timely access to quality information stands out as one of the major challenges facing agricultural information users among other challenges.

5.2.2 Respondents’ information seeking behavior

It was important to establish whether the users were aware of various sources of information relevant to their information needs since information seeking behavior begins with the users’ awareness of relevant information sources. Majority of the extension workers and agricultural researchers were adequately aware of their information needs and were very positive on the user-friendliness of their respective information centers. A combination of favorable information needs awareness and user-friendliness of the agricultural information centers generally contributed to efficient accessibility of the agricultural information services by the extension workers and the agricultural researchers. Additionally, agricultural researchers and extension workers tend to prefer electronic information sources to print information resources. Value of agricultural information to extension workers and agricultural researchers seemed to vary depending on the information sources. Electronic information from online sources such as websites, social media, and electronic journals were slightly more valuable to the respondents compared to information from public libraries.

5.2.3 Availability of quality agricultural information to agricultural researchers and extension workers

Quality of any kind of information depends on its relevance to the users’ needs, appropriate packaging and its timely delivery to the relevant user. As indicated in sections 4.5.2 and 4.5.3 of this report, majority of the extension workers and agricultural researchers acknowledged that their information centers possessed quality agricultural information which was usually packaged in a useable format. This observation is consistent with the respondents’ acknowledgement that their information centres provided quality information in a timely manner. Despite some
dissenting observations from a few of the respondents, the study findings were substantially in agreement with Ojiambo’s observation that some effort has been made in Kenya towards enriching farmers, agricultural researchers and extension workers with quality information (Ojiambo, 2009).

5.2.4 Utilization of agricultural information resources by agricultural researchers and extension workers

Agricultural information was used in four main areas as highlighted by the sampled agricultural researchers and extension workers. The respondents mainly sought information to solve personal problems, facilitate personal and professional growth, and to solve professional problems. However, professional engagements and other activities which contributed to the respondents’ professional growth stood out as the main areas where agricultural information was used. Additionally, agricultural information centres within the two agricultural research agencies were quite outstanding given that 75 respondents accounting for more than 90% of all respondents indicated that the information was very useful. The value of agricultural information was also gauged on its ability to increase the users’ performance. All respondents reported that their professional performance would substantially increase if they were provided with quality information in a timely manner.

5.2.5 Challenges facing extension workers and agricultural researchers in the retrieval of quality agricultural information

Timely retrieval of relevant information was established as one of the major challenges facing majority of information seekers today. Majority of agricultural information users seem to spend a lot of time in retrieving relevant information for their needs. The increasing ease of information
production and publishing might have led to the challenge of irrelevant information being encountered during information search. The sampled agricultural researchers and extension workers also reported that they faced additional challenges such as increased cost of retrieving quality and relevant information from the massive collections of their respective information centres. These challenges were compounded to some of the users who found the information systems to be quite unfriendly.

5.3 Conclusion

The study was successful in establishing information seeking patterns of agricultural researchers and extension workers including their ability to find information relevant to their needs. The information users were adequately competent in the articulation of their information needs and searching for the required information. Agricultural information centres in the two agricultural research agencies were performing quite well in terms of acquisition, management, and provision of information services to their users. However, some of the users were not satisfied with the general services being provided in their information centers. Hence, continuous improvement in the delivery of relevant information services in order to overcome some of the challenges highlighted in the preceding sections of this report. Agricultural production of Kenyan farmers greatly depends on the quality of information services provided to the agricultural researchers and extension workers across the country. Therefore, various providers of agricultural information such as Kenya Plant Health Inspectorate Service and Horticultural Crops Development Authority should improve on the timeliness of quality information provision as one of the ways to achieve their mandate of protecting Kenyan agriculture against pests and diseases.
5.4 Recommendations

In line with the study’s findings, the following recommendations are made:

I. The agricultural information centres should improve their Information Literacy training among agricultural researchers and extension workers in order to improve their information retrieval of quality and relevant information. Lack of adequate training and user-education is also manifested in 35.3% of the respondents who found retrieval of quality information to be very time consuming and 21.6% who reported that they often retrieved information that was irrelevant to their needs. Such training sessions are very important avenues through which different needs and limitations of information centres and users can be established and addressed.

II. Agricultural organizations and information centres should improve in the delivery of timely and quality information to each of their users. A number of the respondents (25.5%) reported that they experienced difficulty in accessing quality information in a timely manner. Therefore, every effort should be made towards improving access to quality information services by agricultural information centres in order to promptly fulfil information needs of their users.

III. Agricultural information centers should subscribe to more agricultural information publishers with open access policies. Increased subscription and collaboration with such publishers with relevant agricultural information will help overcome cost challenges cited by 15.7% of the sampled respondents. Open access policy will ensure that agricultural researchers and extension workers get access to quality information with no, or minimal costs.

IV. Additionally, there is need for agricultural information centers to improve user-friendliness of their information management systems. Some respondents, two per cent of them, indicated that information systems used within their respective information centers were friendly to them. As such, the user interface of the systems should be streamlined to facilitate easier navigation by the users to enhance timely access to the required information.
5.5 Suggestions for Further Research

In order to improve on the findings of this study, a follow up should be conducted among agricultural information centres with the aim of finding out the operational environment and factors that may hinder their effective provision of quality information services. The suggested study would complement the findings of this study given that the latter was more focused on the perspective of information users. Therefore, there is need for a study that would highlight the information providers’ perspectives on the availability, management, and use of agricultural information in Kenya.
REFERENCES


Dear Respondent,

REF: INFORMATION SEEKING BEHAVIOR OF AGRICULTURAL RESEARCHERS AND EXTENSION WORKERS IN SELECTED AGRICULTURAL INFORMATION CENTRES IN NAIROBI COUNTY, KENYA.

I am a Master of Library and Information Science student from Kenyatta University. Currently, I am researching on “Information Seeking Behavior of Researchers and Extension Workers in Selected Agricultural Information Centres in Nairobi County, Kenya.” In this regard, I am humbly requesting you to kindly fill in the attached questionnaire to facilitate timely realization of the study objectives.

Information obtained in this study will be handled confidentially and no part of it will be used outside the study purposes.

Yours faithfully

Dickson Mbatha.

Cell Phone 0722385872
Appendix II: Research Questionnaire

The aim of this questionnaire is to establish the Information Seeking Behaviour of Agricultural Researchers and Extension Workers in Selected Agricultural Information Centres in Nairobi County, Kenya. The data that will be collected through this questionnaire will enhance information managers’ understanding of information seeking behavior of these unique information users, especially those in agricultural information centres. Kindly ensure honesty in your response as much as possible.

Section A: Personal Data

1. Please indicate your area of specialization
   i) Researcher
   ii) Extension Officer

2. Name of your Institution:   i) HCDA  ii) KEPHIS

3. How long have you been practicing in your profession?
   i. 0 - 1 year
   ii. 1 - 2 years
   iii. 2 - 5 years
   iv. 5 -10 years
   v. Over 10 years

Section B: Information seeking Behavior

4. How well do you understand your information need?
   i. Extremely well
   ii. Very well
   iii. Well
   iv. Fairly well
   v. Not at all

5. How well can you articulate your information need?
   i. Extremely well
   ii. Very well
   iii. Well
   iv. Fairly well
   v. Not at all

6. What are some of the reasons why you seek information?
   i. To solve professional problems
   ii. For professional growth
   iii. For personal growth
   iv. To solve personal problems
   v. For leisure
   vi. Others (Please specify) ...............................................................
7. Do you know where to find relevant information for your need?
   i. Yes □
   ii. No □

8. How often do you find relevant information from your organization’s information center?
   i. Always □
   ii. Very often □
   iii. Often □
   iv. Sometimes □
   v. Rarely □
   vi. Never □

9. How useful to you is information from the following sources? (Tick As Applicable)

<table>
<thead>
<tr>
<th>Information Sources</th>
<th>Extremely Useful (i)</th>
<th>Very Useful (ii)</th>
<th>Useful (iii)</th>
<th>Not Useful (iv)</th>
<th>Not Sure (v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i Public Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii Information Center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii Electronic Journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv Internet/Organizations’ websites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v Social Media</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii Colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii Other sources (Specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section C: Opinion on the Organization’s Information Center

10. On a scale of 1-6 rate the user-friendliness (attractive and easier to navigate) of your Information center. (Tick as appropriate)
   i. Exceedingly user-friendly □
   ii. Very user-friendly □
   iii. User-friendly □
   iv. Fairly user-friendly □
   v. Somewhat user-friendly □
   vi. Not user-friendly □
11. On a scale of 1-6 rate your level of satisfaction with the current information services provided by your information center. (Tick as appropriate)

i. Exceedingly satisfied

ii. Very satisfied

iii. Satisfied

iv. Fairly satisfied

v. Somewhat satisfied

vi. Not satisfied

12. If your answer to Question 11 is “Not Satisfied”, please state the reason

…………………………………………………………………………………………………………………………………………………………………………………

13. Please indicate your approval of the statements in the Table below by ticking the appropriate column.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Agree (i)</th>
<th>Agree (ii)</th>
<th>Disagree (iii)</th>
<th>Strongly Disagree (iv)</th>
<th>Don’t Know (v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. My organization’s Information Center accurately understands my information needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. My organization’s Information Center has quality information resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. My organization’s Information Center packages their information in a format usable to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. My organization’s Information Center provides quality information in a timely manner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v. My organization’s Information Center undertakes service delivery surveys regularly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi. My organization’s Information Center undertakes regular information literacy training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii. My professional performance would increase if I’m provided with timely and quality information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. What are the challenges that you face during your search for information?
i. Too much time spent on retrieving quality information.
   
   ii. Retrieval of irrelevant information.
   
   iii. Difficulty in accessing quality information.
   
   iv. High cost of obtaining quality information.
   
   v. Unfriendly information system.
   
   vi. Others
      
      (Specify); .................................................................

Thank you
## APPENDIX III: Research Time Schedule

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONTH</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposal writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation of proposal at department level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposal correction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation of proposal at department</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposal correction and submission at graduate school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piloting of instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection and analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing of project report and submission of first draft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revision of final draft and submission to school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submission of corrected and bound copies of project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX IV: Research Project Budget

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TOTAL AMOUNT (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary</td>
<td>25,000</td>
</tr>
<tr>
<td>Photocopy paper</td>
<td></td>
</tr>
<tr>
<td>Pencils</td>
<td></td>
</tr>
<tr>
<td>Rubber</td>
<td></td>
</tr>
<tr>
<td>Piloting</td>
<td>10,000</td>
</tr>
<tr>
<td>Transportation</td>
<td>15,000</td>
</tr>
<tr>
<td>Meals</td>
<td>8,000</td>
</tr>
<tr>
<td>Typing and photocopying</td>
<td>30,000</td>
</tr>
<tr>
<td>Data collection</td>
<td>25,000</td>
</tr>
<tr>
<td>Data analysis</td>
<td>15,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>138,000</strong></td>
</tr>
</tbody>
</table>
APPENDIX V: Research Authorization Letter

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref No. NACOSTI/P/18/40398/21352

Dickson Maina Mhatha
Kenyatta University
P.O Box: 43844-00100
NAIROBI

Date: 12th March, 2018

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Information seeking behavior of researchers and extension workers in selected agricultural information centers in Nairobi County, Kenya” I am pleased to inform you that you have been authorized to undertake research in Nairobi County for the period ending 12th March, 2019.

You are advised to report to the County Commissioner and the County Director of Education, Nairobi County before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the Commission within one year of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.