

# ASSESSMENT OF INFORMATION NEEDS OF SMALL SCALE FISH FARMERS IN RURAL AREAS: CASE OF KAKAMEGA COUNTY



**MACHANJE DAVID ISENJIA**

Publication Partner: IJSRP INC.

**Publication Partner:**

International Journal of Scientific and Research Publications (ISSN: 2250-3153)

# ASSESSMENT OF INFORMATION NEEDS OF SMALL SCALE FISH FARMERS IN RURAL AREAS: CASE OF KAKAMEGA COUNTY

Authored By:  
MACHANJE DAVID ISENJIA

KENYATTA UNIVERSITY

Publishing Partner:

**IJSRP Inc.**

**[www.ijsrp.org](http://www.ijsrp.org)**

ISSN 2250-3153



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## **Preface**

An enhanced understanding of fish farmers' information requirements, information sources and access to information can help and guide extension officers and other agricultural programmes in provision of effective service and appropriate collections of information resources. The main purpose of the study was assessment of information needs of small scale fish farmers in rural areas with the aim of satisfying information needs for improved fish production. The objectives of the study were; to identify the existing information needs of small scale fish farmers in Kakamega County, find out sources of information, find out accessibility to fish farming information, and lastly to identify the challenges faced by fish farmers in meeting their information needs. The study was to bring an understanding on what fish farmers know and the information required in the process of fish farming and seals the gaps on effective information delivery. The study adopted the descriptive survey design. The target population was 1238: fish farmers in Kakamega County and staff from Kakamega County fishery department. The researcher used purposive sampling for staff while cluster sampling techniques was used for fish farmers. The sample size was 269. Before research the instruments were tested for validity and reliability. The data was collected from fish pond owners in Kakamega County and also the staffs from Kakamega County who work in fishery department were interviewed. Instruments of data collection on fish farmers were documentary review, structured questionnaires and in depth interview guides were used. Statistical Package for Social Sciences SPSS Version 25 was used to calculate and analyze the data quantitatively. To improve on fish farming assessment of information needs has to be done for delivery of relevant information which can be utilized effectively. The findings of the study revealed that; majority of fish farmers are those who reached primary and secondary education followed by those at tertiary level. Commonly cited information needs of the fish farmers was; farmers needed information on agricultural programmes to improve on their farming and fish pond construction and management practices in order to have more harvest. Subsequent to it was on fish breeding and spawning. Further the study revealed that extension officers and farmers meetings are highly preferred sources of information. Lack of awareness of information sources is a major challenge that hinders access to information according to the study. The study recommends: that more extension workers need to be employed by the county government, followed by Packaging and branding of information to suit community information needs, regular evaluations criteria like performance and influence, policy making, resource mobilization and staff training are to be done regularly.

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*Author*

**MACHANJE DAVID ISENJIA** (Master of Library and Information Science Student, School of Education, Kenyatta University, Kenya)

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## **ACKNOWLEDGEMENT**

With gratitude I thank God for driving me to accomplishment of this great work. The financial, spiritual, material and moral support received from my workmate and family members are pillars of my success. With fortitude my sincere and heartfelt appreciation extends to: lecturers and staff in Department of Library and Information Science who steered me throughout the course. I thank my supervisors Dr. Martin Gichugu in specific, with highest respect and humbleness, for his commitment, patience, stimulation and encouragement. My friend's classmates and relatives were a blessing through prayers, encouragement and support in diverse ways. All and those that I cannot mention may God bless you in a very special way.

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**ABBREVIATIONS AND ACRONYMS**

**DFO** District Fisheries Officer

**KDAO** Kakamega District Agricultural Officer

**FAO** Food and Agriculture Organization

**FFEO** Fish Farming Extension Officer

**NGO** Non-Governmental Organization

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND TO THE STUDY**

#### **1.0 Introduction**

This chapter contains the background to the study, statement of the problem, objectives of the study, research questions and the significance of study. Furthermore limitation and delimitations, assumptions, theoretical framework and conceptual framework have been discussed.

#### **1.1 Background to the Study**

Development of rural areas is not in question as it supports around 70% of the population in the world (Mittal 2013). Motivation is to develop the rural areas so as to retain prevailing population levels, end the exodus and attract back those who have migrated. Improved communication and information access in rural areas are directly related to economic and social development. People at all levels of rural must be able to access information and converse their needs. Several researches have been done about the topic of information needs of communities in rural areas both internationally and locally. Some have been library-based as the base for provision of information and others are focused on a particular user group (Aboyade 2002).

Internationally aquaculture produce at the start of the 21<sup>st</sup> century was 37.5 million metric tonnes, accordingly the yield only represent approximately 29% of world fishery produce which falls short of the expected 53 million metric tonnes desired to feed the world (parker 2003). Fish farming is known to make important contribution to the food and nutritional security of approximately 200 million people in Africa. Furthermore, is a source of income for more than 10 million people who are mostly small-scale fish farmers and entrepreneurs of fish production and marketing (World Fish Center 2005). As important as fish is to the local families and to the nationwide food security, it has been detected that a wide gap do exists between its supply and demand (Oginni 2004). In light of this situation, it is not of surprise therefore that

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fish farming has gained reputation not only in dietary purposes, but also as a source of employment and income for fish farmers in Africa.

Studies done by Rashid and Akanda (2015) in Bangladesh establish that the information needs of fish farmers range from collection of fish fry and transportation, type and amount of fish feeds, fish pests and diseases control, selecting suitable variety of fish, methods of fish collection and harvesting, fish processing, preservation and marketing. According to the study conducted in Nigeria it was reported that the information needs of small scale fish farmers includes improvement of fingerling breed, stocking operation, feed formulation techniques, feeding process, marketing, spawning and preservation method (Ijatuyi et al., 2016). In addition, Mustapha et al. (2016) confided that the most preferred information needs of fish farmers in Nigeria was pond stocking, record keeping, groups formation, fish breeding, fish pond management practices, fish harvesting techniques and preservation skills.

The demand for fish in Europe and even countries in African has promoted the desire to increase commercial fish farming in Kenya given that the infrastructure is being improved by the Kenyan Government (Owani 2013). In Kenya fish farmers practice farming as a source of food, employment and for economic stability. No development can take place without a component of information. Information has constantly been a vital element in the improvement of human society and has modified over a long period of time the way in which we reason and accomplish (Meyer 2011). For increased agricultural production and successful marketing and supply strategies information is crucial (Oladele 2006). For realization of best practices, a source of financial assistances and also for giving out experiences information is the key. Information enables farmers to make wise judgments regarding marketing, production and managing their welfares effectively to cope up with everyday challenges and to realize their targets (Matovelo 2008).

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Assessment of information needs involves user studies which is a useful area of research in library and information science that brings to effectiveness and efficiency in delivery of information to the users. In order to maximize the utilization of fish farming information, resources and services, it is essential on the part of extension officers to know about information needs of farmers and this can only be realized through assessment of user information needs (Nicholas and Herman 2009). Fish farmers are the ones to participate and be a major player in improvement of the Information services and accessibility and it is necessary to know the users' psychological behaviours such as their information seeking behavior, information needs, utilization of information resources, and the problems encountered while using existing resources and their expectations from the system (Wilson 2012). Kakamega County in its locality has only one public library which the local farmers cannot utilize while seeking information. The only public library is situated at Kakamega County headquarters' and peoples from the entire County find it hard to access such information because of the long distance to the headquarters.

Provision of information can be more adequate if traditional methods of information transfers are used. Information needs of rural people are largely not provided for together with the prevailing gaps in the information delivery and transfer process while at the same time information play a key role in rural development strategy (UNESCO 2002). Information has to be packaged in formats that are accessed by those who cannot manage to read as well as the literate and the highly literate and act as centers for information sharing and link indigenous knowledge with external knowledge. The community itself needs to participate in crucial and active process of establishing and sustaining of the information centers and information services. To improve on the production of fish, there should be continuous assessment, Set up a standards for measurement at which the service output can be determined and the impact on the delivered information can be evaluated.

## **2 Statement of the Problem**

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Information is vital in daily life, and access to information is a basic and fundamental right and essential part of nation's resources according to the Kenyan Constitution 2010. Kenya has great potentials for aquaculture growth because it is endowed with natural features, good climate and other resources that can improve on aquaculture production (FAO 2005). The major sources of fish particularly, rivers and lakes at this time have declined. The production of fish has declined because the lakes and rivers which are the main source of fish are almost depleted. While at the same time the demand for fish has increased immensely because of the rapid population growth of people in the world. Access and availability of adequate and timely information on fish production from different information sources is very important especially to small scale rural farmers that could enhance farmers' produce and storage.

Consequently it's important to assess the information needs of rural people including fish farmers of which most of them rely on small scale farming. Effective assessment of the information needs are to be conducted to determine the exact needs of policy makers, service receiver, service providers and the needs of the Kakamega County Government in terms of resource allocation and steps taken to address the agricultural information needs of the fish farmers. Provision of information services will greatly enhance fish production, transform the community into a lively and enlighten farmers and empower their economic base. Determining information needs of fish farmers assists in designing appropriate programs, policies and innovations of organizational. Assessment of information needs and provision of information are to be effective and relevant to control severe shortage of information services in rural areas. This will lead to rural communities fill recognized and find it easy to relate with other communities' in regard to development.

Babu *et al.* (2011) had confided that an improved understanding of farmers' agricultural information deficit and information sources could assist and guide extension services and other agricultural programs to better target precise groups of farmers. In addition the information provided should be practical which can easily

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be applied and implemented and this study is aimed at investigation into the information needs of small-scale fish farmers of Kakamega County. Assessment of information needs has to be carried out to ensure information provided is relevant to the fish farming activities and fill the gaps between what farmers already know and the skills they require in the process of farming. The situation demands for a research with the aim satisfying the information deficit of rural fish farmers and improve on fish farming as a consequence.

#### **1.2.1 Purpose of the study**

The main objective of the study was to assess the agricultural information needs of fish farmers in rural areas of Kakamega County with aim of satisfying the information needs.

#### **1.2.2 Objectives**

1. To establish the existing information needs of small scale fish farmers in Kakamega County.
2. To assess sources of information for fish farmers in Kakamega County.
3. To find out the access to fish farming information by fish farmers in Kakamega County.
4. To identify the challenges encountered by fish farmers in meeting their information needs.

#### **1.2.3 Research Question**

The research is to find answers to the following questions:

- Establish the existing information needs of small scale fish farmers in Kakamega County?
- What are the information sources for fish farmers in Kakamega County?
- Find out the access to fish farming information by fish farmers in Kakamega County?
- Identify the challenges encountered by fish farmers in meeting their information needs?

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**1.3 Significance of the Study**

The assessment of information needs and utilization of the information by fish farmers may improve on fish production. The study may benefit researchers, fish farmers, agricultural extension officers and Non-Governmental Organizations on provision of information services to fish farmers. The study may precisely;

Enlighten the prospect and practicing fish farmers, the County government and NGOs deeper understanding of fish farmers' information needs and the methods used to satisfy the information needs.

A guide for policies and decisions making that will benefit specific groups of fish farmers. This will help in resource allocation and solutions used to address the needs of service receivers who are the fish farmers.

The study may trigger future researchers to explore small scale fish farming in rural areas. In addition, it may act as an eye opener for new researchers in the field of assessment of information needs for fish farmers.

**1.4 Limitation and Delimitation of the Study**

**1.4.1 Limitation of the Study**

Some respondents were not very open and would give inadequate information even after reassuring them of the confidentiality of the information collected and the purpose for research. The researcher explained on issues about research over and over again so that the information that the respondents provided were well informed, relevant and accurate.

Some fish farmers were illiterate or semi-illiterate and it was not easy for them to read and interpret the questionnaires. These gaps were filled by research assistants who were hired within every ward. They assisted in interpreting and translating the questionnaires into local language for fish farmers to understand without changing the meaning.

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### **1.4.2 Delimitation of the Study**

Delimitations are aspects that assist the researcher to manage some of the possible challenges in the research and which the researcher can manage Mugenda and Mugenda, (2003). This study focused on assessment of information needs of small scale fish farmers in rural areas of Kakamega County. The study covered fish farmers from Kakamega County leaving other rural areas in other counties because the researcher cannot manage to cover all the rural areas in the time frame given. In this regard, there are chances that the study will leave out some information that could have been gathered if all fish farmers in rural areas from other counties which would have been involved in the findings.

### **1.5 Assumption of the Study**

The respondents were aware of the information needs and they volunteered to confide the essential evidence that would lead the investigation.

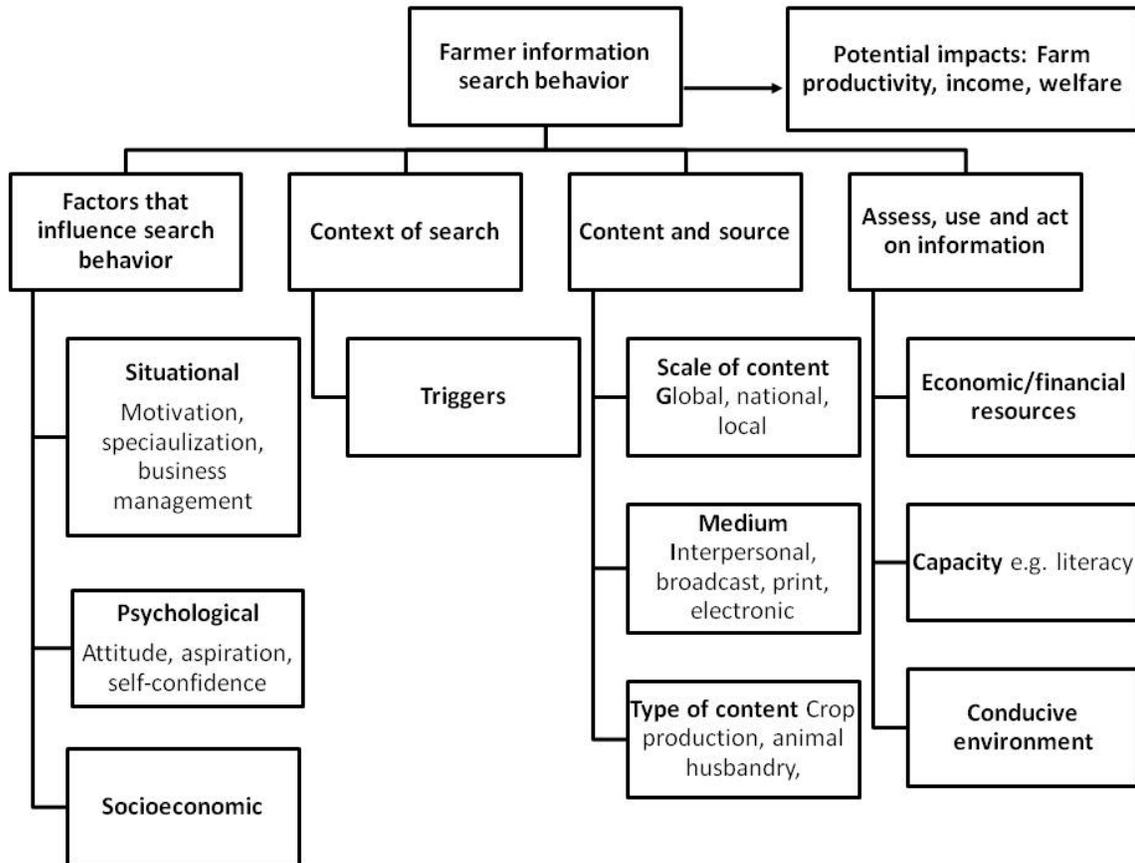
There are challenges affecting fish farmers in accessing information in Kakamega County.

That the provision of agricultural information service that is provided by Kakamega County Government in the fishery department is very helpful to fish farmers in the area of study.

Realizing the information seeking behaviour and the information needs of small scale fish farmers is overriding to effectively provide for the required information.

### **1.6 Theoretical Framework**

The research was guided by information needs and behaviour models developed by Wilson (2006); and Diekmann, Loibl, and Batte's (2009) the framework for economics of agricultural information. The framework help in showing how features of information search from an individual perspective translate into final welfare outcomes. The achievements are manifested through farm production and income and the various circumstances of information search, information content and sources, and how information is converted into specific action through its adoption by the farmers.



**Figure 1.1: Framework of farmers’ information needs and search behavior**

**Source: Diekmann, Loibl, and Batte (2009) and Wilson (2006).**

The Framework of Farmers’ Information Needs and Search Behaviour outlines information search that relate to a set of observable factors that could be used to explain the information search behaviour of fish farmers. The factors that motivate information search are psychological and socio-economic factors (Diekmann, Loibl and Batte 2009). These characteristics by themselves may not fully explain the information needs and information search behaviour of the farmers Wilson (2006). The information seeking behavior and retrieval is actualized by the ambition of farmer’s for search for information and the ability of the farmers to gather social investment and social learning skills. The sources of information and content needed will further refine the search behaviour. The aspiration of the searcher will depend on the level information search in terms of global, national and local information sources.

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To assess, access, and utilize the information, farmers must have economic resources e.g. money, skills, abilities, technology. The farmers also need to have social resources such as confidence, motivation, faith, and knowledge (Heeks 2005). Therefore, farmers must be able to access the content and at the same time assess the relevance and apply it to a particular decision and be able to act upon the information.

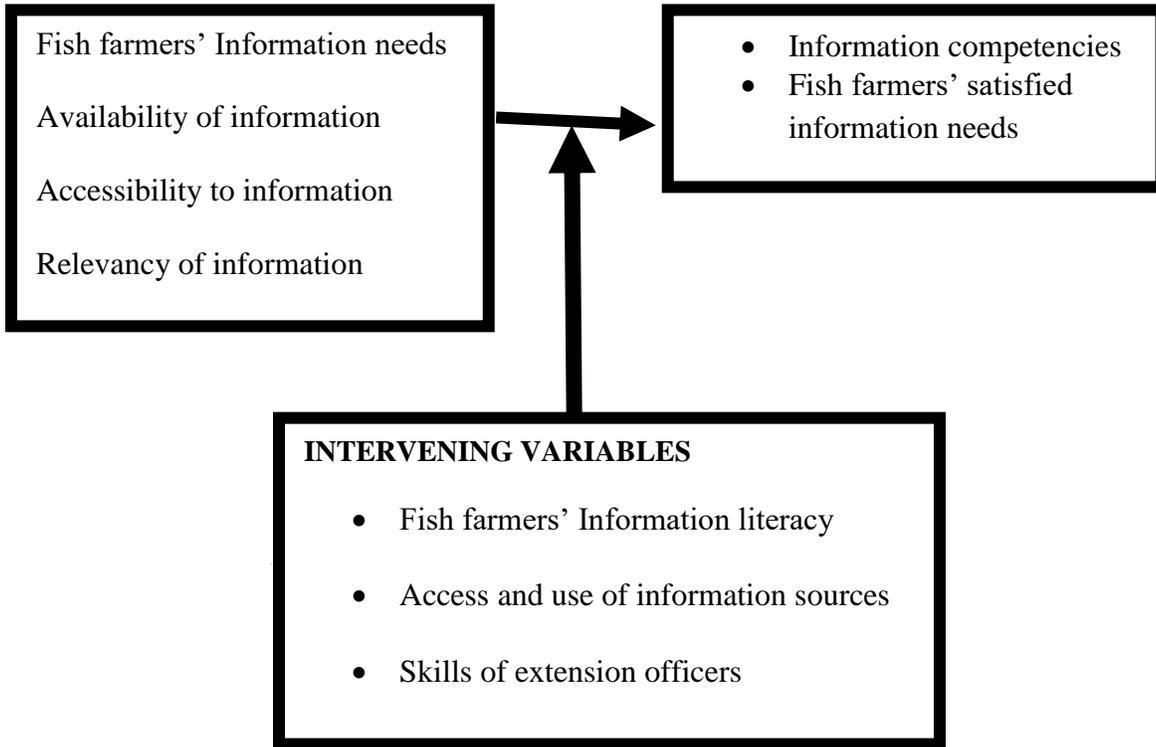
The theory is related to the study for assessment of information needs has to be done to ensure that information provided is applicable to farmers' undertakings and fulfill the information gap between what fish farmers are aware of and what they need to learn about fish farming. Factors that motivates farmers' search for information in context of social and economic developments creates a knowledge gap. Economic resources are required to assess access and utilize the information. The economic resources refer to money, skills, abilities, staff and technology to carry out the exercise. The end result will be the fish farmers' information needs will satisfied. The information provided must be relevant to rural people and recognize their beliefs and culture. The theory is also realistic to this research since it is about on real-life context where social and economic activities take place.

**1.7.1 Conceptual Framework**

The dependent and independent variables were dealt with by researcher as specified in the diagram below.

**Independent variables**

**Dependent variables**



**Figure 1.2: Conceptual Framework Model**

**Source: Researcher**

The independent variables are: Fish farmers' Information needs, Availability of information, Accessibility to information and Information technology. The intervening variables are the measures done to enable farmers determine information deficit: Fish farmers' Information literacy, access and use of information sources, Skills of extension officers. The results shall be that fish farmers will develop information competencies and satisfied information needs. This is where fish farmers are able to such, select and retrieve information without any problem. When farmers are well informed they will be able to produce

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high quality of fish under minimal cost. Also there will be constant supply of fish to the market with affordable prices.

**1.7 Operational definition of terms**

**Information:** are concepts, facts, creative works of the mind and data of significance, and question answering useful for decision making ( Kaniki, 2001).

**Information seeking behaviour:** looking for information with a purpose as a result of information need to fulfill an objective (Wilson, 2000).

**Information need:** is the motivation people develop and feel to seek for information, (Ehikhamenor 1990),

**Utilization:** transforming into achievement the accessed agricultural information or applying information by fish farmers to perform the agricultural production activity (Brice and Gray 2004)

**CHAPTER TWO**

**REVIEW OF THE RELATED LITERATURE**

**2.1 Introduction**

The chapter is fundamentally a review about contribution of other scholars who have researched and published on research topic in Kenya and the world about assessment of information needs of small scale fish farmers in rural areas. Literature review is systematized based to the objectives of the study. Literature review covers: existing information needs of small scale fish farmers in rural areas of Kakamega County, the sources of information for fish farmers in rural areas, assess the information seeking behaviours of Small scale fish farmers in rural areas of Kakamega County, and challenges faced by fish farmers in rural areas of Kakamega County in meeting their information needs.

**2.2 Overview of assessment of information needs.**

The theme discusses the concept of assessment of information needs from diverse perspectives with focus on the trends in development in information provision in the early 21st century Nicholas & Herman (2009) and Wilson (2006). The concept provision of information needs has to be shifted away from the library based setting and need to be diversified that it could be more beneficial when approached from a wider context of real world of information age. Aliyu, (2013) in his research on “Provision of Information to Rural Communities”, states that, ‘information provided to communities should be focused on people and it has to be applicable and current to meet their social and economic welfare that contribute meaningfully to the development agenda.

Literature reviewed is relevant to the objectives of study which include: first, second and third objectives of this research and focuses on topic of research which is assessment of information needs of small scale fish farmers in rural areas. Accessibility and adequacy of information approach as well as the attitude of farmers towards information and information sources are the determinant to the successful use of information as a

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resource for growth of agriculture to a large extent. He goes ahead by saying ‘the major challenge is not only providing information that is prerequisite, but also for farmers to get use of that information which is often constrained by issues related to policies and markets, resource availability and institutions. He asserts that rural farmers need to be taught the skills to evaluate, seek and use and disseminate information successfully.

### **2.3 Information needs**

The concept of information needs has been used in some research in information science, Library science and particularly in division of information users’, information seeking, information needs and use, to explain triggering factors for information retrieval process. Nicholas & Herman (2009) had to improve on the definition by explaining that, “basically it is the need for information that personalities must contain to accomplish their work satisfactorily, attend to issues satisfactorily or accomplish a hobby or interest happily”. This becomes evident as fish farmer often need information for achieving their vast objective of their role, task, interest or goals. Therefore Daniel G. Dorner, et al (2015) defines Information need: ‘as significance judgment that particulars in a user group, service provider or facility has an information related problem requiring a solution in order to fulfill a necessary, useful and defensible purpose’. From the definition above we can say; Needs assessment is a process that attempts to estimate deficiencies and or is an activity that estimates gaps and insufficiencies.

Gupter, sleeze and Russ-eft (2007) emphasize that, “the information gap is between what is present and the desired circumstance is known as need”. The information needs facilitate the information seeking behaviour of fish farmers. Information seeking is simple actions carried out by all information seekers and are expressed through a particular way of behaviour. Information needs are the requirements that may encourage farmers to be involved in an information seeking process, in order to provide for their knowledge gaps. Rural small scale farmers that study is focusing on, need information on fish production

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and management. Therefore, providing for information needs depends majorly on the available relevant content of information and relevant information sources.

Information provided must be applicable to fish farming activities and fill the gap between what people know and what they require. According to Wilson (2000), information needs are affected by a variety of factors, such as type of information sources available, how the information will be utilized, the background, the motivation, professional orientation and characteristics of the individual user. Other factors are economic, socio-political, legal and regulatory systems around the user, as well as the results after using information.

The priorities of information needs of rural fish farmers are for information which will lead towards providing an adequate independent source of food and income, under their own control. Active farmers usually have enough practical knowledge. What they require is innovative information resulting from research and development work and which should be timely as required at a particular time for specific purpose. For this study, it is of significant to understand the kind of farming activities and works of fish farmers in kakamega County. Information Needs of rural farmers has to be evaluated on a continuous basis because information needs depend on a definite situation and time.

#### **2.4 Existing Information needs of small scale fish farmers in rural areas**

Fish farmers' information needs and requirements vary according to the stages in the process of production in aquaculture. In general, all fish farmers pursue to obtain sufficient, high value and current information to make decisions connected to risks throughout the year. It is not possible for one to firmly assert to be aware of almost all the information needs of rural farmers mostly concerning an information reliant sector like farming where there are continuously challenges confronting farmers every day.

Information is Data that have been processed and put into a format that can easily be understood and is in a useful context. The information has to be communicated to a recipient who uses it to make decision.

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Adereti et al. (2006) further defines information as processed data that is well understood and has a meaning and is in a useful context which is relayed to receiver who uses it to make judgment. These when well analyzed together can be accepted as a missing cognitive map of how things that are practically done by fish farmers in the new society. These desires and increase of gaps in their information needs which need to be satisfied in order to assist them cope with their new life surrounding, culture and environment. Motivational issues are the need to pursue ideas that are new, the need to confirm true ideas and the need to make decisions. Before the provision of the essential information to rural fish farmers in the area of study assessment has to be done. This will determine delivery of relevant information to the farmers.

### **2.5 Sources of agricultural information for rural fish farmers**

Information source is an individual or organization that generates or provides about a message Statrasts (2004). Sources of Information play key role in disseminating inventive technologies to the ultimate users making them not only aware of the useful information but also create interest, promote understanding, assist in mental evaluation and ultimately motivate them for adoption Gupta and De (2011). The information officer and agricultural extension officers must come up with priority on the user about providing information to rural users that can satisfy the needs of the very users in relations to both the channels by which it is delivered and content of the information Ekoja, (2002).

Additionally, a study done by (FAO, 2013) reveal that farmers themselves, farmers' cooperative societies and neighbors and are applied as preference information sources used by farmers in retrieving agricultural information. According to (FAO, 2013) radio covers a wide area, is fast and more dominant and easily accessed channels and in many countries has been preferred in communicating farming information to farmers. The Radio covers people at all different levels and who are able to understand the language of transmission at the same time. In these regard the use of radio as mass communication instrument for farming growth has long been acknowledged by many. Bereh, (2002) submitted that in remote places with

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no telephones and good networking, people prefer radio to announce funerals, meetings, seminars, weddings and other functions. The communities within their localities use radio stations to express their own observations about development. In addition Television give values to radio broadcasts and provision of information, thus increasing the range of information available to farmers. The agricultural extension officers from Kakamega County Government can avail a complete series of demonstration of results through play or illustration and giving emphasis on hands-on and differences over a given time.

Assessment of information needs will determine the best sources of information which are effective and applicable to the farmers who are in rural areas depending on the accessibility and networking. The main reason is that some farmers are not able to understand the language under which the communication is being done and some needs translation. Ogboma (2010) noted in his study that ‘the information sources used by fish farmers were individual experience, training, workshops and Seminars, friends and neighbors and Ministry of agriculture. Other information sources are publication of agriculture, non-Government organization, extension officers, libraries of agriculture research and posters. Therefore, in understanding of the fact that every fish farmer favours certain information sources or channels over the others, a thorough study and assessment has to be done before determining for any source information to address the needs of an individual farmer.

### **2.6 Access to fish farming information by fish farmers in Kakamega County**

For improved production of fish access to information is very necessary, according to Ekoja (2003). Although the fish farmers may know that services are available and that they are entitled to receive they must be able to access. Accessibility matters also include the best hours of operation for example services are to be available when farmers are present and prepared to receive. The efficiency of fish farming majorly depends on the accessibility, availability and to precise and reliable information. The major goal of

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agricultural extension is to create farming information available and accessible to rural fish farmers who need it.

The successful production of farm output is largely determined by the availability and access to accurate and dependable information. It has been observed that Farmers in rural arrears having access to the correct information can manage major problems that remain as obstacles to rural community development and it can also improve the welfare of livelihoods. Stepheno, Hendrik, Stillwell and Moris (2005) further said that agricultural information for rural farmers can be provided for in a number of channels including verbal or oral means and even either print format or electronic and digital communication technologies. Stepheno, Hendrik, Stillwell and Moris (2005) further states that information needed by Small scale fish farmers in rural areas is accessed through electronic media. The electronic media which include radios and televisions should manage to broadcast information in the language and preferred time that is popular to fish farmers. Most fish farmers are free during evening hours and that is the best time to relay the message through electronic media. Aderibigbe (1990) according to his study viewed that interactive communication one of the major techniques of inter-connecting the rural farmers because the majority of them are not highly learned. Obtaining agricultural information from fellow farmers, relatives or group members it is because that most farmers trust information obtained from friends or colleagues more than other sources and it is free.

Babu et al. (2011) an improved understanding of farmers' access to farming information requirements and sources of information may work as a guide to extension officers and other agricultural programmes to target specific groups of farmers.

### **2.7 The Challenges facing fish farmers in accessing agricultural information**

Fish farmers in rural communities comprise of farmers who are both literate or illiterate, school leavers, school dropout and even those who never attended formal education at all Nwafor (2005). Fish farmer's

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experiences several challenges in accessing fish farming information. In the rural areas the challenges include; no access roads, no electricity, no pipe borne water, no industries and other social amenities that are common in the rural communities that obstruct access to information this is according to Iwe (2003). It is not possible to conclude that all the needed information can simply be accessed or is available. Tologbonse *et al.* (2008) found out that challenges encountered by rural farmers in accessing farming information were information that is outdated, language that could be understood, different information sources that users are not aware of, lack of enough funds to procure information and poor and outdated format of information media. Fish farmers in Kakamega County, reside in rural areas and the challenges given out may also apply to them.

Aina (2006) publicized that the features affecting the sharing of agricultural information to rural farmers include: radios and television sets that are not owned by everybody, farmers are not highly educated, and the personnel hired and trained in agricultural information are not enough. Farmers to compete with other farmers he/she, need to be aware of the supply and market prices, developing trends, information about the products, potential challenges, and must be able to reach market in time. The farmer must have ways to communicate and receive information consistently for great opportunities.

Chen, L. and Zhou, L. (2006) noted that public libraries in rural areas are very important to communities in rural areas and hence foster economic development, just as academic libraries are a force to the education of masses. Locals in the community can access the information materials without any problem.

Introduction to, use and utilization of appropriate information by the small-scale fish farmers can help them to improve their fish farming business and will enable them to move out of poverty. It is of significance to understand the dynamics of information as an important resource for the fish farmers. Available information on fish farming Knowledge need to be efficiently disseminated and delivered to the fish farmer

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for better production. For delivery of relevant information which can be utilized assessment of information needs has to be done.

**2.8 Summary of literature and research gap**

The literature review was organised thematically, by using themes and sub-topics that relates to the objectives of the study. The literature review discussed the following issues: information needs, preferred information sources in delivering information to rural areas, and factors affecting the access to information. Assessment of information needs is an idea that is highly dependent on the values of a given society and profession, economic and social factors which are mostly neglected while evaluating information needs of fish farmers in rural areas. For effective provision of information to rural fish farmers, information needs has to be determined, which calls for continuous assessment of information needs and areas of priorities.

Mainly the identified gap is farmers do not receive sufficient updates on technical information on agricultural production techniques and fish farming, harvest, processing, marketing research and development as required. This is occasioned by shortage of professional staff and limited funding from relevant authorities. fish farmers assumes that information provided is adequate to satisfy their information needs and similarly the information providers assumes that they already have the information required by fish farmers in advance and it is sufficient to provide them with what they think will satisfy their information needs.

To promote homestead based food production amongst small scale fish farmers, assessment of information needs has to done in order to deliver information based to individual information needs. Therefore this study attempts to bridge the gap by demonstrating lack of satisfaction of information needs to small scale fish farmers and provides propositions on methods of filling the information gap.

**CHAPTER THREE**

**RESEARCH DESIGN AND METHODOLOGY**

**3.1 Introduction**

The chapter describes methods applied in carrying research according to research objectives and questions. The chapter explains research design, variables, research methodology, location of study, target population, sampling techniques, sample size, research instruments, pre-testing, validity, reliability, data collection techniques, data analysis, logistical and ethical consideration.

**3.2 Research Design**

Descriptive research design was adopted for purpose of this study. According to (Kombo 2006), descriptive research design is applicable in social science when the researcher intends to collect information about opinions of people's, habits, perceptions or any other social science issue (Kombo, 2006). About descriptive research design approaches, this research adopted the case study method. Descriptive research design describes a unit in detail either within a context or holistically. It allows an in-depth investigation of the research problem (Kombo and Trump, 2006). This design was to enable the researcher to utilize research instruments which was interviews and questionnaires. Qualitative and quantitative research approaches of data collection methods were used. According to the study, descriptive research design was appropriate because it entailed to outline what the fish farmers know and the information they require in the process of fish farming and how the information needs can be satisfied.

**3.2.1 Variables**

Variables are things that vary. A variable is simply an attribute on which cases vary (Bryman 2008)

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### **Independent variables**

#### **Fish farmers' Information needs**

Information that is essential to solve problems or the degree of expressed dissatisfaction with the information. In other words is referred to information deficit or information gaps.

#### **Availability of Information services**

Availability ensures that the information and the information sources are always present. It is the ability of information providing institution to deliver dependable information to the rural fish farmers and will justify in form of quantity, quality, saliency, content and credibility.

#### **Accessibility to information**

It is the ability of the users to search and retrieve information that suits their information needs. The information that is accessed through media like television and radio should be aired at the right time and language that can easily be understood by fish farmers.

#### **Relevancy of the information**

The relevance of information indicates how well a retrieved document or set of documents meets the information needs of the users. Information provided should be relevant which implies that it should be timely, current and in a format that can be interpreted.

### **Intervening Variables**

#### **Fish farmers' Information literacy**

Information Literacy is awareness and the abilities to be able to locate information effectively by user, available information being managed well, being seriously with information resources, communicating new knowledge creatively and effectively, applying professional ethics in use of information and knowledge to better society.

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### **Access and use of information sources**

Access is the ability to obtain information from a variety of different information sources. Access to information is about intellectual and physical. Physical access is getting to the actual information source, while intellectual access implies other skills and processes such as literacy for the comprehension and sustainable use of information. Farmers' access to different information sources helps them to get a variety of information. For information to be accessed it information infrastructure be available, that includes channels of communication, access points and systems of delivery required for the acquisition, processing and use of information (Reitz, 2006).

Information use referred to as “the mental and physical acts involved in incorporating the information found into the person’s existing information memory. It is mainly for what happens with the information upon having been obtained, and the application of accomplishing a particular task or goal ( (Ijatuyi E. A., 2016)lett & Toms, 2005). Information use can also be regarded to a final step in the process of information seeking, which begins with the emergence of a need, then locating the information to solve that need and the information’s ultimate use (Meyer, 2005; Choo, 2002).

### **Provision of Information literacy**

Information Literacy is awareness and the abilities to be able to locate information effectively by user, available information being managed in the well, being seriously with information resources, communicating new knowledge creatively and effectively, applying professional ethics in use of information and knowledge to better society.

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#### **Skills of extension officers**

The extension officers should have the ability and capacity to get more skills through deliberate, systematic and sustained effort in their relevant area. The fish farmers should also be able to learn from the extension officers from Kakamega County, fishery department the new skills and techniques in fish production.

#### **Dependent variable**

##### **Information competencies**

The ability of an informed fish farmer shall be actualized when the quantity and quality of fish produced per unit area would be high. The production factors shall be maintained low and the return on the output will be high. The fish farmers will have to control on operation costs, capital investment will be restricted. The supply of fish to markets will be regular, the quality of supply must be adequate and the fish will have fair prices of which many people can afford.

##### **Fish farmers' satisfied information needs**

Fish farmers' Information needs are the requirements that could drive farmers to seek for information purposely to fill their knowledge gaps. The information needs of an individual or a group of individuals largely depend on the work activities of such an individual or group of individuals (Ukachi, 2007). Thus, rural fish farmers, on whom this study is focusing, need information on fish production and storage

### **3.3 Location of the Study**

Location for study needs to be understood by researcher and be sorted out before he or she embarks on the study, Kothari (2004). The study was carried out in Kakamega County. Kakamega County is located in the Western part of Kenya. The county has twelve sub counties. The County covers an area of 3,051.3 KM<sup>2</sup> and is the second populous county after Nairobi with the largest rural population. According to the 2009 Kenya Population and Housing and Census (KPHC) report, the total population in the county is 1,660,651 with many people being unemployed.

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The study dealt only with the assessment of the agricultural information deficit of fish farming, and involved fish farmers, extension officers and researchers. These county was selected because the area receives high rainfall and has rivers and streams that has constant flow of water throughout the year that if well utilized by practicing improved fish farming there can be more fish produced and also can be as a source of income. Therefore there is need to improve on communication and information access in rural areas for social and economic development and these made the researcher to carry research in the area.

### **3.4 Target Population**

Target population represents overall context about which research findings can be generalized Orodho and Kombo (2002). Fish farmers were the target population. The researcher obtained the list of names of fish farmers from agricultural offices in Sub Counties that are within Kakamega County. The total number of fish farmers in each Sub County was between 95 to 120 fish farmers. The total number of fish farmers in 12 sub counties that are in Kakamega County was 1238 that formed the target population.

### **3.5 Sampling techniques and sample size**

#### **3.5.1 Sampling Techniques**

Sampling can be defined as the procedure of choosing a number of characters or objects from a population provided that the selected group contains essentials representative of the characteristics found in the all-inclusive population, Orodho and Kombo (2002). Purposive sampling was used to select the staff from Kakamega County fishery department which was used to choose cases that help answer research questions or achieve research objectives. Staffs at Kakamega County Government fishery department were considered highly informed in the area of study and because of their number the researcher used purposive sampling. Cluster sampling techniques was used to select respondents from fish farmers. The Kakamega County is divided into twelve clusters which are administrative Sub Counties: Lugari, Likuyani, Malava, Lurambi, Navakholo, Mumias East, Mumias west, Matungu, Butere, Kwisero, Shinyalu and Ikolomani.

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From each administrative sub county 22 fish farmers were selected by use of random sampling was to add up to 264 respondents. Therefore, this method was relevant for the study as the sampling technique gives all fish farmers who participated in the study an equal chance of being selected. Purposive sampling will be used on the 5 staff from fishery department Kakamega County. Fish farmers were targeted because they are the ones who receive information that is relevant to the topic of research. Staffs in fishery department are the ones who provide extension services to fish farmers.

### 3.5.2 Sample size

The total units selected to participate in the research from the target population is called sample size (Mugenda and Mugenda 2003). According to Mugenda and Mugenda (2013), when the study population is less than 10, 000, a sample size of between 10% and 30% is a good representation of the target population and hereafter according to the table 3.1, 22% is adequate for analysis. In the study the sample size was  $(22/100*1238=269)$  fish farmers and 5 staff from Kakamega County fishery department. This formed 22 % percent of the target population.

**Table 3.1: Sample Size**

Sub Counties	Target population	Sample size	percentage
Staff Kakamega County: Fishery Department	5	5	100
Lugari	104	22	21
Likuyani	106	22	20
Malava,	98	22	22
Lurambi,	115	22	19
Navakholo,	102	22	21
Mumias East	125	22	18
Mumias west	95	22	23
Matungu	110	22	20
Butere	98	22	22
Kwisero	89	22	25
Shinyalu	95	22	23
Ikolomani	96	22	21
<b>Total</b>	<b>1238</b>	<b>269</b>	<b>22</b>

### **3.6 Research Instruments**

Research instruments are the tools used by a researcher to collect data which include questionnaires, interviews and focus group discussions. According to the research, researcher preferred to use questionnaires and interviews to collect data.

#### **3.6.1 Questionnaire**

The questionnaire is the most appropriate data collection instrument which could reach out to many respondents at ago. Kothari (2004) defines questionnaire as an instrument for research that contains questions designed for collecting information from respondents. The researcher used open and closed questionnaire; these was beneficial as it meant that the researcher was to have the opportunity to collect quantitative data. Questionnaires were also to enable the respondents to respond to questions on the challenges in accessing information needs freely and frankly because they are not required to reveal their identities, this in return increased the likelihood of getting accurate information. The questionnaire provided flexibility in that it allowed the fish farmers complete the questions in their free time.

Research assistants were hired from each Sub County to assist the researcher in distribution and collection of the questionnaires. Also they were to assist fish farmers who are illiterate to fill and answer the questionnaire. The research assistants hired were people who are residents of the respective Sub counties. Fish farmers who could not read and write were assisted by research assistant.

#### **3.6.2 Interview Schedules**

Structured interviews were used to collect information from staff at Kakamega County Government fishery department. All the 5 staff at Kakamega County Fishery department were interviewed. This is because they are assumed to possess adequate and relevant information regarding fish farmer's information needs and seeking behavior. A structured interview was used purposely sampled to provide in-depth information on the provision of information to fish farmers. Structured interview was preferred because its economical and

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easy to carry out. A request letter for the scheduling of the interview was sent to the staff a day before. The conversation took the form of face to face interview. Interviews gave the researcher an opportunity to follow-up on interesting clarifications, listen and allow more questions to be asked.

### **3.7 Pre-test of data collection instruments**

A Pre-test of the research instruments can disclose deficiencies in the design of a proposed questionnaire or procedure and these can only be done before time and resources used on large scale studies. Before carrying out research, data collection instruments were tested in Sabatia Sub County that is in Vihiga County. Sabatia sub County shares same boundaries with Kakamega County. The research instruments to be used in the study were prepared in discussion with the researcher's supervisor. 10 fish pond owners who hail from Sabatia Sub County were randomly selected and issued with the questionnaires of which they were given time to fill and return. The respondents were not included in the main study. Pre-testing was to assist the researcher to check whether; the instruments adequately generate the required information and whether the items are logically arranged to facilitate responses. The pre-test helped to verify whether; the data collected was quantifiable, analyzable and useful and whether questions are acceptable to the respondents. The pre-test also assisted to gauge the acceptability of the methods used to collect data. It again helped determine the length of time needed to administer the interview guide, questionnaires and analyse the documents. It enabled the researcher to carry out a preliminary analysis which was to ensure that the wording and format of questions do not present any difficulties when the main data was being analyzed. After the pre-test some items were edited to ensure the questions are well worded and formatted.

#### **3.7.2 Validity**

Validity refers to the accurateness and meaning of inferences, which are founded on the results of research. According to Best and Kahn, (2002) the degree to whereby results achieved from analyzing data that really represents the phenomena under study is refers to validity. The research to measure the validity of the

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instruments, the researcher adopted the content validity. It has to do with how accurately the data obtained in the study represents the variables of the study. For the sake of the study, the researcher sought the opinions of experts in the field of study especially the lecturers in the department of Library and information sciences; Kenyatta University to establish the validity of the research instrument. This was to facilitate the necessary correction and modification of the research instrument thereby enhancing validity.

### **3.7.3 Reliability**

According to (Mugenda and Mugenda, 2003) reliability is the measurement of the degree to which research instruments yields consistent results or data after repeated trials. The split-half method was used to test the reliability. Use of correlation coefficient can be applied to determine reliability through the split-half method in each data instrument (Frankfort-Nachmias 2000). The split half technique involves splitting the statements of test into halves of evens and odds items, then calculating using Pearson's correlation coefficient ( $r$ ) between scores.

A sample size of 10 fish farmers from kakamega East Sub County was picked for the purpose to test reliability. This sample was excluded in the real study. Each questionnaire was grouped by serial numbering of each question instrument into two sets: even numbered questions formed one set and odd numbering forming another set. The evens were grouped under X and the odd under Y. The scores from each of the two sets were then correlated to give an estimate of reliability (Frankfort-Nachmias and Nachmias 2002). According to Gupta (2011) reliability Coefficient of 0.6 or more was considerate as adequate measure of reliability. The study used Cronbach Coefficient Alpha formula to test for internal consistency to obtain the average score of the split half estimates. The coefficient alpha was 0.983. It is important to note that a reliability coefficient of 0.70 or above is considered acceptable in most situations of social sciences. However, below 0.70, the internal consistency becomes questionable but above 0.70 to 1.0 correlation coefficient is perfectly high. In this case, the study items had a relatively high reliability. Calculations were done by us of SPSS Version 25.

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**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.983	.987	2

**Inter-Item Correlation Matrix**

	X	Y
X	1.000	.975
Y	.975	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	80.900	80.800	81.000	.200	1.002	.020	2
Inter-Item Correlations	.975	.975	.975	.000	1.000	.000	2

**3.8 Data Collection Techniques**

The main tool for collecting data in this study is the questionnaires produced by the researcher based on the study objectives. A sample size of 264 fish farmers was issued with the questionnaires of which they were to fill and return to the researcher. The questionnaires contained both open-ended and closed questions. Research assistants were hired to assist in distribution and collection of the questionnaires. For each administrative ward a research assistant was hired locally. Before issuing the questionnaires the researcher assured the respondents on confidentiality and the purpose of research and appreciated their positive responses in the research. Questionnaires were collected on the same day where possible and for those that could not manage to fill the questionnaires on the same day the instruments were collected after three days.

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Some fish farmers who were not able to read and fill the questionnaires were assisted by research assistants. They were to read and explain to the respondents the questions in the language they understand without changing the meaning. The answer given by fish farmers were recorded by research assistants. Research assistants were hired locally and had to undertake training on research before they start working. Also the research used qualitative approach method by interviewing the 5 extension officers at the Kakamega County Government. The researcher conducted in-depth interviews by use of the interview guide on assessment of information needs on staff at Kakamega County. Appointment for interview was sought from the respondents before it being administered. Also interviews were conducted in a place that provides both comfort and privacy to the respondents.

### **3.9 Data analysis**

Data analysis refers to scrutinizing the data that has been collected in the survey and making interpretations and inferences Mugenda and Mugenda (2003). Data analysis was prepared by applying qualitative and quantitative methods. After the collection of data the Questionnaires were cleaned of from ambiguous responses and proof reading was done to guarantee consistency in the collected data. The records and lists was edited, validated, coded and then entered in the computer for analysis and interpretation using the Statistical Package for Social Sciences (SPSS) Version 25. The data was offered using descriptive statistics such as percentages and frequencies. Interview schedules was recorded and then organized as per the interview guides and responses recorded in thematic manner. The findings were presented according to the objectives of the study. Further to that, a qualitative analysis of personal opinions and views were presented as quotations of the study directly.

### **3.10 Logistical and Ethical Considerations**

Before Carrying out research, it was necessary for the researcher to seek authorization from the relevant bodies. The researcher requested permission from the graduate school of Kenyatta University which

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allowed him to carry out the research. The researcher also wrote to the ministry of fisheries Kakamega County seeking permission to be granted in order to carry out the research of which he was allowed. High Confidentiality was guaranteed and maintained in all transactions and full responsibility upheld by the researcher. Consent was also required from all participants used in the study and the subjects that they participate voluntarily. The purpose of the research was fully clarified in advance to the respondents and the subjects were informed. The researcher was to remain honest and open in connection with other researchers and objectives of study by acknowledging their contribution to the study.

**CHAPTER FOUR**

**PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION**

**4.1 Introduction**

The chapter basically presents findings, interpretations and discussions according to the objectives and research question in relation with literature reviewed on the assessment of the agricultural information needs of fish farmers in rural areas. The research was also to identify the existing information needs and the preferred sources of information for fish farmers in Kakamega County. Descriptive statistical analysis method was adopted in order to describe the results obtained. Descriptive statistics were convenient in summarizing data using tables and graphical description.

**4.2 Response Rate**

**Table 4.1: Response Rate**

<b>Respondents</b>	<b>Sample size</b>	<b>Response</b>	<b>Percentage</b>
Staff Kakamega County: Fishery Department	5	5	100
Lugari	22	17	77
Likuyani	22	15	68
Malava,	22	18	86
Lurambi,	22	20	90
Navakholo,	22	14	72
Mumias East	22	11	50
Mumias west	22	12	54
Matungu	22	13	59
Butere	22	14	63
Kwisero	22	12	54
Shinyalu	22	19	86
Ikolomani	22	18	81
<b>Total</b>	<b>269</b>	<b>188</b>	<b>70</b>

**Source: Field Data**

It was essential to consider the response rate of the study to form a foundation for reliability of the research findings. Table 4.1 shows the response rate of this study.

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The response in table 4.1 above specifies the number of respondents that took part in the actual study based to the sub counties that are in Kakamega County. Overall response of the study was 188(70%). Kothari (2005) and Berchy (1991) states that a response that is over 50% rate is reliable for analysis of data in any research and consequently data is within the acceptable limits and fit for analysis. All the 5 staffs at County fishery department were interviewed giving a 100% response rate.

### **4.3 Fish Famers' Experience**

The researcher wanted to know fish farmers' experience by posing the same question. Respondents were requested to state the number of years for which they have practiced fish farming. When asked to specify the experience they have in fish farming, 167 (89%) fish farmers responded to the question. According to the Table 4.2 showed that many (78%) of the respondents had fish farming experience of five years and could therefore be considered as new entrants.

**Table 4.2: Fish Farmers' Experience**

	<b>Years</b>	<b>Frequency</b>	<b>Percentage %</b>
Fish famers' experience	1-5	131	78
	6-10	30	17
	11-15	8	5
	16 and above	167	100

### **Source: Field Data**

Farmers who have long experience means they are more informed and therefore can share the experiences with the new farmers. This is in agreement with Adefalu et al. (2013) who noted that more years of farming experience are needed to facilitate the acquisition of farming skills in farming production.

### **4.4 Level of Education**

The researcher wanted to be aware of level of education of the fish farmers by posing the same question. The results revealed that several fish farmers (47%) in the study had attained secondary education level.

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those who had attained tertiary education level were (31%) and for those with primary education (18%).

This indicates that many of the fish farmers had formal education.

**Table 4.3: Level of Education**

<b>Level of education</b>	<b>Frequency</b>	<b>Percentage %</b>
Non formal education	8	5
Primary	30	18
Secondary	77	47
Tertiary	51	31
<b>Total</b>	<b>166</b>	<b>100</b>

**Source: Researcher (2018). SPSS version 25.0**

Educational level by fish farmers determines on information accessibility, understanding and implementation of new agricultural improvements and practices (Aina and Dulle, 1999). Farmers who are educated are able to access information from several sources easily, and are able to generate knowledge from the sources. In addition, all staffs interviewed were graduates. Indicating they have skills to carry needs assessment.

**4.5 Information Needs for Fish Farmers**

The researcher further wanted to know the information needs of fish farmers from the area of study. Respondents were requested to name the type of agricultural information they required from the checklist of answers and were to give more than one response.

The results were tabulated in the table 4.4. According to result 97% fish farmers needed information on agriculture, 90% also needed information on pond construction and management, 84% on General information on government policies/programmes and management, and 85% needed information on breeding and spawning. The responses on Awareness on credit facilities and Fish marketing were 86% and 85 respectively, 80% was for General information. 75% was for management of funds, 70% was on Information on personal development, and 65% needed information on security and lastly 65% for record keeping purposes.

**Table 4.4: Information needs of fish farmers**

<b>Information needs</b>	<b>Frequency</b>	<b>Percentage</b>
Information on agriculture	172	92
pond construction and management	169	90
Information on government policies/programmes	165	88
Fish processing and storage	163	87
Awareness on credit facilities	161	86
Fish breeding and spawning	159	85
Fish marketing	154	82
General information	150	80
Water quality management	147	78
management of funds	141	75
Source of fingerlings or juvenile	139	74
Information on personal development	131	70
Site selection	131	70
Information on security	122	65
Record keeping	120	64

**Source: Field Data**

Fish farmers who are in the area of study were questioned to ascertain their information needs from the checklist as indicated. Information needs of the fish farmers are shown in table 4.4. Information is overriding to any cluster of people in the society and is very essential for one to proceed on with life and accomplishments. Most frequently mentioned information need of the fish farmers who gave feedback,

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needed information on agricultural programmes to improve on their farming and pond construction and management practices in order to have more harvest. Staff who were interviewed 92% were in agreement that the farmers need information on agricultural programmes. Similarly, fish farmers complained about lack of information on how to manage fish pond water quality parameter. This was confirmed during field visits when it was observed that 78% of fish famers said fish ponds water was brown in colour. This is in line with Carballo et al. (2008), who states that fish pond water being brown colour indicates water turbidity, while greenish colour indicates water clarity, well fertilized and productive. Brown water colour indicates poor fish pond management. This is a sign that nearly all the fish farmers have information deficit in their knowledge and skills, which needed to be provided for. The findings are related to those obtained by Meitei and Devi (2009), who states that almost all farmers in the rural places have information needs.

During group discussions, interviews with extension officers and furthermore through personal observation, it was revealed that most fish farmers had relied more on sun drying to preserve their harvested fish. Akinola et al. (2006) in his study confides that lack of control of over drying rate may occasionally result to over-drying or under-drying, fish exposure to dust, bacteria, dirt, insects infestation are some of the drawbacks of sun drying as methods of fish processing and preservation. For example during interview extension officer complained condemnation of the harvested fish while processing and preservation by sun drying. This submits that farmers relied on local methods of fish preservation and processing, this could be attributed by low or lack of accessibility of information on other techniques, or awareness of existence of other methods recommended. The information needs ranked low by respondents included, water quality management, management of funds and Source of fingerlings or juvenile. The least ranked under information needs were Information on security and Record keeping. 92% of the fish farmers who were interviewed exposed need for information in their fish farming process. These judgments agree with that of

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Kamba, (2009) who claims that no society can be able to progress without knowledge, and only it can become informed if it recognizes and make utility of information as a tool for development.

**4.6 Preferred Information Sources Accessible to Fish Farmers**

The researcher wanted to establish the information sources that are applicable to fish farmers while in pursuit for information. The fish farmers were asked to name the preferred sources of information accessed when seeking for information. According to results in table 4.5 demonstrates sources of information used by fish farmers. The study revealed that 95% percent of the respondents' accessed information from extension officers, 90% gets information through Conference and seminars, 88% access information through farmers meetings, 85% get by group discussion while 70% access the information through radios. The study further revealed that 65% accessed information from experienced farmers, 50% used television, 25% use newspapers, and 22% accessed information from the library lastly 15% through internet.

**Table 4.5: Information sources Accessible to fish farmers**

Type	Frequency	Percentage
Extension officer	241	95
Conference and seminars	228	90
Farmers meetings	223	88
Group discussion	215	85
Radio	178	70
Experienced farmer	165	65
NGO workers	139	55
Television	127	50
News papers	63	25
library	59	22

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Internet

38

15

**Source: Field Data**

According to the interview it was noted that extension officers and farmers meetings are highly preferred as good sources of information. The extension officers are highly trained and are available when need arises in the area. 65% responded by saying experienced and Progressive fish farmers in the locality mostly perform as the best source of information during meeting and discussions. This is in line with Tandi Lwoga, Stilwell, and Ngulube (2011) who insisted in his findings that interpersonal sources like members of the family, neighbours and friends are better in making available agricultural information because of their reliability, dependability and highly trustworthy by the community living in rural areas. A number of them also use to consult each other to share and verify the information received. Similarly this study is supported by findings of Chaudhry *et al.*, (2008), and that of Edeoghon *et al.*, (2008), in conjunction with that of Nosheem *et al.*, (2010) who concluded that friends, neighbours, relatives and experienced farmers significantly they deliver agricultural knowledge, skills and information to practicing farmers on farming procedures and practices for sustained agricultural development.

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With the availability of electricity in the rural areas it makes radios and televisions to be common as a mass media. This was revealed during interview where three Farmers confirmed access to different agricultural and fishery related local program like Mwananchi mkulima and kilimo biashara and in most cases they are sources of receiving emergency information particularly about floods or any other natural disasters. The use of the of radios and televisions by respondents further corroborates with the findings of Barguma and Ndaghu (2014) who established in their study that radios and televisions are very important and convenient means by which fish farmers do access information. Globally radios and televisions can easily be operated by the illiterate people. This was supported by a female fish farmer during interview that accessing information through radio and television is very effective media of disseminating innovative agricultural and marketing information to rural farmers. This is because it is very cheap and fast means of disbursing of information to farmers and Extension officers. Agricultural institutions and NGOs must communicate and disseminate farming information to farmers using this media because most rural farmers in Kakamega County own radios and televisions.

They also opt for farmers with immense experience and NGOs for receiving significant information as they can definitely contact them because of their ease of interaction in the rural area. This is in agreement with Swanson and Rajalahti (2010) who states that, ‘the aptitude to pursuit for the information is highly dependent to the information sources that are quite accessible to farmers. Information needs of the local could be met by an excellent and well managed extension structure that applies traditional and modern procedures of communication like television, mobile phones and radio whereas the need for global information has to be accessed via internet connectivity or through private firms or published books and journals. He further states that roles played by Non-governmental organizations and farmers’ founded organizations (FBOs) are gradually being recognized as key for information dissemination. During visit and field trips two farmers said newspapers are good source of information for farmers who are literate.

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The outcome of these results was in agreement by the research of Ngathou *et al.*, (2006) and Farooq *et al.*, (2007) whom in their different studies resolved that the printed media would be the most preferred and educated in rural areas. Internet scored lowest as most of the farmers are not updated with new technologies and availability of computers and networks are scarce in rural areas. Consequently, the fact that every fish farmer precisely requires different information sources or channels over others, it is significantly important to carry out comprehensive assessment before determining for information channel or source to satisfy their information needs. This statement is in agreement with the topic of research.

**4.7 Venues Where Fish Farming Information is accessed**

In the study the researcher wanted to find out venues or places that fish farmers can access fish farming information by posing the same question to the respondents. According to the study it is revealed that 146 respondents 78% get information in meeting held for Extension purpose, 103 respondents 55% get through seminars, 85 respondents 45% get on markets. In addition 15 respondents 29% get in the church or mosque, 43 respondents 23 get during funeral gathering and lastly 13 respondents 3% get in information from meetings held for other purposes.

**Table 4.6: Venues where fish farming information is accessed**

Venue or place	Frequency	Percentage
In the church/mosque	29	15
In meeting held for other purpose	13	7
In the market	85	45
Information resource centers	66	35
In meeting held for Extension purpose	146	78
funerals	43	23
seminars	103	55

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**Source: Field Data**

According to the outcomes of the interview 3 extension officers revealed that fish farmers if well informed and invited by extension officers for a meeting they will attend in large numbers. One of the staff went ahead and explained that even some fish farmers will sacrifice their time and make sure they attend the meeting. Fish farmers do not exclusively use only one venue to access information and most of them combine information from other venues basing to their information needs and availability. Dissemination of information can conveniently be done to a large audience at once and especially when people are gathered together. Sharing of ideas and information takes place where people meet together and remain attentive for a given purpose. 55% of the respondent will attend seminars and whenever they meet at market places farmers will discuss issues to do with farming, Person-to-person communication is the most effective ways of sharing information. This is supported by Mtega and Benard (2013) who also established that people in rural areas need information to solve the problems that they encounter. This increase the integrity of the researchers, NGOs and development agents, as it enables them to respond either directly or indirectly to the needs of the farmers. In the church or mosque agricultural officers are invited to talk to the faithful about fish farming. This makes it easy to farmers who cannot find time to go and attend seminars. Funeral attracts huge crowds, government officials takes the advantage and explain to people present about services provided by government.

#### **4.8 Factors that Promote Fish Farmers' Access to Information**

The researcher wanted to know factors which respondents put into consideration while seeking for information. The fish farmers were asked to state factors put into consideration in choice of information Sources by ticking in the space provided.

**Table 4.7: Factors that promote fish farmers' access to fish farming information**

<b>Factors</b>	<b>Frequency</b>	<b>percentage</b>
Adequacy of information sources	179	95
Timeliness and up-to-datedness	177	94
Proximity to the information source	173	92
Reliability of the information source	165	88
Affordability of the information source	141	75
Format of the information source	131	70

**Source: Source: Field Data**

The Table 4.7 shows factors what influence the choice of information Sources used by fish farmers while seeking for information in the area of study. According to the study done it was revealed that 95% of the respondents indicated adequacy of information, 94% timeliness and up-to-datedness, 92% Proximity to the information source while 88% Reliability of the information source. It was further established that 75% and 70% said that affordability and format of the information source respectively were criteria of choice.

Extension officers during interview divulged that, majority of the fish farmers prefer adequacy of information sources. This marks as the major criteria for choice of the information source followed by timeliness and up-to-datedness. Accuracy indicates that the information is free from bias. Timeliness implies that the recipients can access the information when needed and relevance states whether the piece of information precisely answers users' questions of why, when, what, who and how? (Ofuoko et al.,

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2008). Staff interviewed confided that fish farmers prefers information that is current and up dated. Two extension officers said reliability featured as one factor that farmers depend on while seeking for information. This confirms the findings of (Bhagachand, 2012; Odera, 2016) who confides that farmers who get access to reliable information have a better chance to improve and increase on their farm produce unlike those who have no access to information. Affordability of the information source comes in as the second last and the format of the information source was the last among the choices made. This revelation is in agreement with that of Meyer (2005), who states that information will not be accessed if information sources used are not familiar to the anticipated beneficiaries. Consequently, the information providers should disseminate information using the information sources which users are aware and can afford. Proper understanding of the rural fish farmers' in the community should be a criterion for provision of information in rural areas of Kakamega County. The scenario directs that information should be repackaged particularly according to the needs of a given users, for it to be more accessible for the target group.

#### **4.9 Challenges facing fish farmers in accessing agricultural information.**

Fish farmers were asked to identify the challenges encountered in accessing fish farming information. Out of the 188 respondents, 168 (89%) respondents provided their views in this regard, while 20 (11%) respondents had no any idea regarding these issues. Table 4.8 demonstrates the challenges encountered by respondents in access to agricultural information, 151 respondents (90%) Lack of awareness on information sources, 147 respondents 88% few number of agricultural extension officers, 134 respondents (80%) lack of time 146(87%) lack of enough funds 144(86%). Furthermore 134(80) Lack of time, 129(77) Lack of cooperation among fish farmers. According to the study the respondents further indicated that 104(71%) cited illiteracy as a challenge and 67(40%) mentioned Language barriers among constrains for farmers in accessing information.

**Table 4.8: Challenges of accessing agricultural information**

<b>Constraints of accessing agricultural information</b>	<b>Frequency</b>	<b>Percentage</b>
Lack of awareness on information sources	151	90
Few number of agricultural extension officers	147	88
Lack of time	134	80
Lack of cooperation among fish farmers	129	77
Information not current/too old	127	76
Not relevant	119	71
Limited literacy level	104	62

**Source: Field Data**

An example is where one respondent from Matungu Sub County who reported that he does not know where to access information other than from friends, neighbours, family members and personal experience.

Agricultural information sources and services should be highly promoted at the location, create awareness and encourage usage by farmers. The area lack awareness of information sources which posed as a major challenge, also the place has very few extension officers who find it difficult to serve the whole county which has a large population. In this regard, it is not easy for extension officers to serve the County efficiently to reach out to all the fish farmers. This is in line with what was found out by Aina's (2006), which discovered that the ratio of agricultural extension officers against the population in Africa was too low. Some farmers have low income and cannot afford to finance for some activities. Some don't access electricity, television and some cannot buy newspapers. It was also discovered that some fish farmers can not cooperate among themselves in the process of sharing information. Some are mean and others don't have time to meet and have discussion with their colleagues. Sometimes farmers access the information when it's already late and you find that it's not very useful. Some farmers are illiterate and semi-illiterate

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and it's difficult for them to access information in print and advanced technologies. Some farmers will only manage to listen and read information in local dialect. Foreign language like English needs an educated person.

**CHAPTER FIVE**

**SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

**5.1 INTRODUCTION**

This chapter summarizes essential issues as recognized in the entire study and also makes relevant conclusions and recommendations based on policy, best practice framework and further research.

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**5.2 Summary of the Main Findings**

The study used the questionnaire and interviews as tools to collect data. The study findings established that majority of the farmers were between the age of 30 to 50 years, followed by those over 50 years and last the respondents who were the age below 30 years. In as far as education level is concerned, the study revealed that most of the farmers had no formal education and others had only attained primary level while it was noted that those in secondary and tertiary level were few. This means that majority of the small scale fish farmers were not highly educated.

**5.2.1 Existing information needs of small scale fish farmers**

The fish farmers expressed their need for information in fish farming activities. According to the table 4.6 indicates that the most commonly cited information need of the fish farmers who were sampled, needed information on agricultural programmes to improve on their farming, pond construction and management practices in order to have more harvest. Subsequent to it is the information needs on Fish breeding and spawning which indicates that rural fish farmers needed information to attain success in life. Another area of information need for farmers was fish marketing and source of fingerlings or juvenile. Information is paramount to any group of people in the society, to entrepreneurs and more especially information is to enable people carry on with life and its activities.

**5.2.2 Sources of information for fish farmers in Kakamega County**

The most commonly used information sources according the study were interactive sources e.g. Extension officer, conference and seminars, farmers meetings and group discussion. The use of extension officers was very high which means more officers are needed in the field to disseminate information. The use of modern media such as the radio, books and newspapers to seek information was seen not to be effective enough since sometimes there were no means to facilitate easy access to such medias like finance to purchase them or time to listen to them or literacy to read them especially when presented in English language. It is

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therefore true that for maximum utilization and exploit of information depends on availability of information in appropriate format.

**5.2.3 Factors that Promote Fish Farmers' Access to Information**

According to the study it was revealed that the factors that promote farmers' access to information are: adequacy of information, timeliness and up-to-datedness, Proximity to the information source and Reliability of the information source.

**5.2.4 Challenges faced by fish farmers in meeting their information needs.**

The study also established the following as being challenges which hindered farmers from accessing and using information; Lack of information services, community information resource center is not available, inadequate number of extension agents, lack of funds, lack of awareness of information sources, lack of time and illiteracy.

**5.3 Conclusions**

Findings on the assessment information needs of rural fish farmers indicated that fish farmers in the surveyed County had unmet information needs. According to this study respondents complained they had very little access to agricultural information and consequently fish farmers' information needs are not fully provided for, because dissemination of information is not effective. This situation was attributed to the limited identification of farmers' information needs in the surveyed county.

The findings gave evidence that most priority on identification of farmers' information needs is purely done by the information providers. According to the findings also it revealed that visits to the farmers' village, school meetings, farmers' groups and seminars were the main method used for the identification of farmers' information needs. The implication is that face-to-face communication was the most important method used by information providers to access fish farmers in the rural areas. Noticeable fish farmers are more likely to understand the information provided through verbal communication because of the social

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culture existing in most rural areas of developing countries.

In addition, the findings indicated that lack of information resources, poor working conditions and poor of infrastructure are the major challenge to affective provision of information to fish farmers in rural areas. In order to address the challenges faced by rural fish farmers in assessment of the information needs of fish farmers' in rural areas, the study gives the following recommendation.

**5.4 Recommendations**

**5.4.1 Policy Recommendation**

- I. Assessment of information and provision of information to fish famers is positively perceived, it is essential for Kakamega County Government to hire additional agricultural extension officers and have appropriate links with research centers and be provided with enough funding to enable them access all fish farmers in the region. Extension officers should be able to carry out continuous assessment of fish farmers' information needs, which will enable them to provide relevant information to rural farming activities and fill the gap between what people know and what they require in the process of fish farming.
- II. Kakamega County needs to establish information services in rural areas which should be able to provide both the basic information needs of rural people and their information requirements. Rural people are to be in full participation in the process of introducing new ideas and in the design and implementation of development projects. This will not only ensures the incorporation of new ideas but also to foster the development of knowledge created by rural people as they take part in the development process.
- III. Evaluation criterions, within a given period of time are essential for information provision to rural communities in developing countries. Attempts should be made to measure performance and the contribution of information services provided to fish farmers based on fish farmers' harvest. Set

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objectives have to be used as indicators created to measure all the major targets for rural information provision. The culture of serious analysis, research and continuing evaluation of the provision of information services to rural communities need to be stimulated.

**5.4.2 Recommendations for Further Research**

It has been indicated in this study fish farmers preferred to use information sources that encouraged face-to-face interactions. Therefore it's advisable to do more research on formal information sources, which are print media that could be more convenient for accessing information to semi-literate communities in rural areas.

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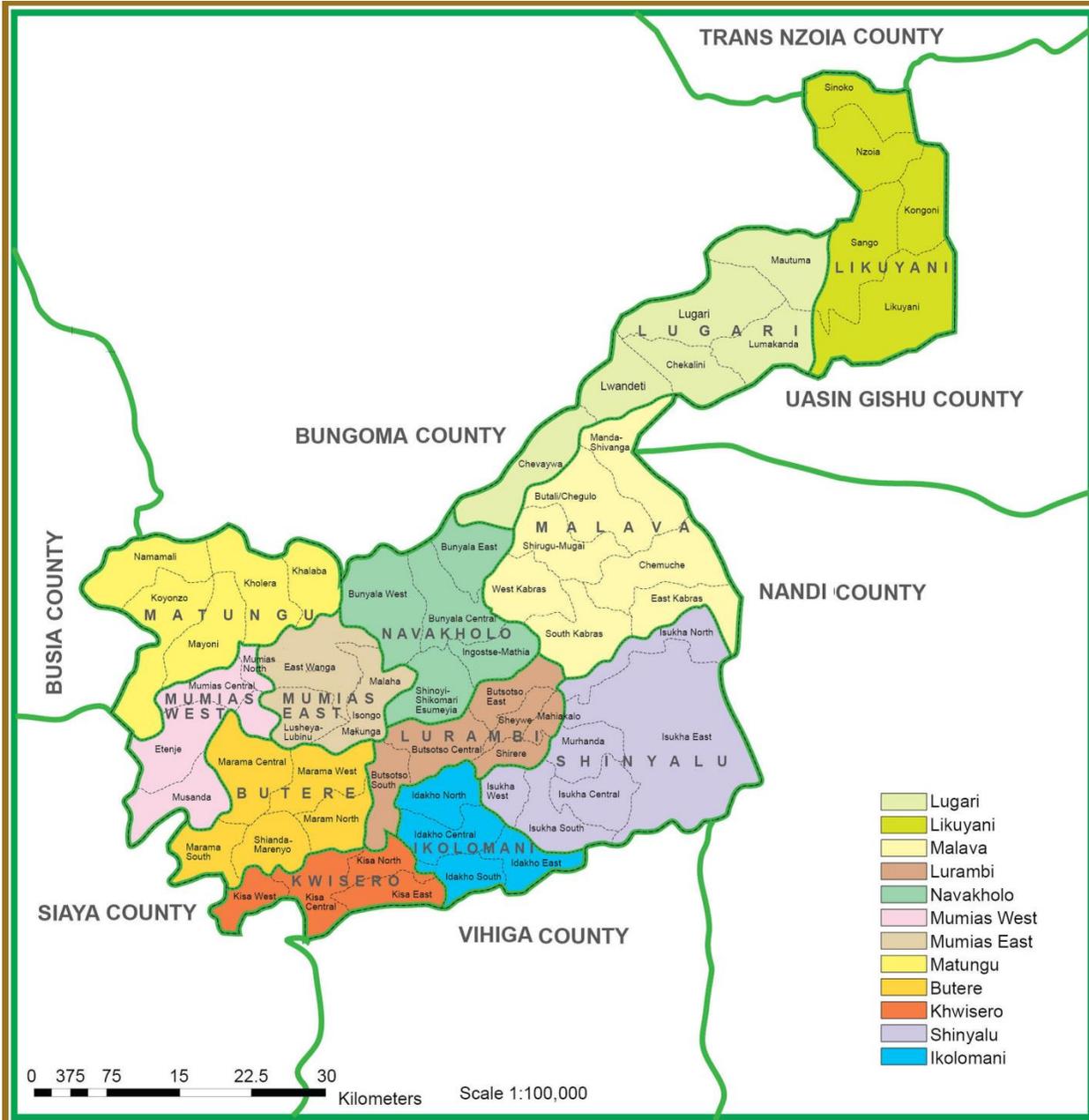
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### **APPENDIX I: MAP OF KAKAMEGA COUNTY**

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Source: Field Data

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**APPENDIX II: PERMISSION TO CARRY RESEARCH**

David Isenjia Machanje  
P. O. Box 190  
Kakamega  
10.03.2016  
Phone number 0728589712



*Allowed on condition  
that the final funds  
are shared with the  
department  
10.3.2016*

To  
Departmental Head  
Fisheries  
Kakamega County

Dear Sir,

**RE: RESEARCH IN YOUR ORGANIZATION ON 'ASSESSMENT OF INFORMATION NEEDS ON SMALL SCALE FISH FARMERS IN KAKAMEGA EAST SUB-COUNTY'**

Further to my letter that I had already written to you, the above matters refer.

I humbly request you to grant me permission to carry out research in Kakamega East Sub - Count on the above mentioned matter. The research will be about:

1. To find the information needs of the fish farmers in rural areas.
2. To find out the source of information used by fish farmers.
3. To examine the challenges faced by fish farmers in meeting their information needs.

The information provided shall be treated with high confidentiality for the purpose of research only. Attached is the concept paper for your perusal.

Thanking in advance.  
Yours faithfully

David Isenjia Machanje

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**APPENDIX III – INTRODUCTION LETTER TO RESPONDENTS**

Dear respondents

I am a master's student at Kenyatta University in Department of Library and Information Sciences, pursuing a research study entitled assessment of information needs of small scale fish farmers in rural areas. The main objective of the study is to examine the access to and use of agricultural information by fish farmers in rural areas of Kakamega County.

I have selected you because you are a practicing fish farmer in the mentioned area of the study. Your honest contribution to this study is highly appreciated based to the subject of study. The product of this research will have to provide more on effective provision of information services. The study will ensure information provided is relevant to the fish farming activities and fill the gaps between what farmers already know and the skills they require in the process of farming. I therefore request for your cooperation in the delivery of essential information and you are assured that the entire information given towards this study shall be treated with greatest confidentiality and applied absolutely for research only.

David Isenjia Machanje

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**APPENDIX IV: FISH FARMERS QUESTIONNAIRE**

**PART A (DEMOGRAPHIC DATA)**

- 1. Age a. Below 30 years ( ) b. 30 - 45 years ( ) above 45 years
- 2. Level of your education qualification
  - a. Non formal ( ) b. Primary ( ) b. Secondary ( )
  - c. Tertiary ( ) d. Other ( ) Specify.....

**PART B: INFORMATION NEEDS INDICATORS**

3. Indicate the information needs for fish farmers in your area by ticking in the table?

<b>Information needs</b>	<b>tick</b>
General information	
pond construction and management	
breeds and spawning	
Information on personal development	
Fish storage	
fish processing	
Fish marketing	
Information on security	
Information on agriculture	
Information on government policies/programmes	
Information on climate	
Awareness on credit facilities	
management of human capital	
management of funds	

4. Indicate the most preferred information source?

<b>Information sources</b>	<b>tick</b>
Radio	
Television	
News paper	
library	
Extension officer	
Farmers' training session	
Group discussion	
Experienced farmer	
Total	

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5. How often to you consult or Access information services concerning fish farming information.

<b>Period</b>	<b>tick</b>
Daily	
Weekly	
Monthly	
Yearly	
Never	
<b>Total</b>	

6. Name the venues or places where fish farming information is accessed or acquired from?

<b>Venue or place</b>	<b>yes</b>
In the church	
In meeting held for other purpose	
Personal contact	
In the market	
In meeting held for Extension purpose	
funerals	
Personal interaction	
seminars	
Others name them	

7. Name the challenges facing fish farmers in accessing agricultural information. (Tick were appropriate)

<b>Constraints of utilization</b>	<b>yes</b>
It is not timely /season relevant	
Information not relevant to me (not important)	
I a m not able to read	
The information is broadcasted while I a m busy	
The community information resource center is not available	
Lack of time	
Few extension officer	
Lack of funds to travel	
Lack of cooperation among fish farmers	
Lack of interest	

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**APPENDIX V: EXPERT INTERVIEW GUIDE  
FOR AGRICULTURAL OFFICERS IN KAKAMEGA COUNTY FISHERY DEPARTMENT**

**PART A: (DEMOGRAPHIC DATA)**

1. Sex a. Male ( ) b. Female ( )

2 Designation \_\_\_\_\_

2. Length of service as an agricultural officer?  
\_\_\_\_\_

3. Working experience in Fishery department in terms of years.  
\_\_\_\_\_

4. Highest level of your academic qualification  
\_\_\_\_\_

**PART B: INFORMATION NEEDS INDICATORS**

1. How frequently do you personally enforce on the provision of information services to fish farmers?

Tool	Frequency of checking			
	daily	once per week	once per month	once per year
a. provision of current information				
b. Checking on management of fish ponds by fish farmer				
c. identification of information needs				
d. training on fish farming				
e. checking on availability of information resources				
f. utilizing the information				
g. Checking on fish farmers progress				

2. Do the people who reside in the Kakamega County participate in the identification of Information needs for fish farming?

3. What are the priorities in terms of provision of fish farming information?

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4. What is your feeling about support offered on information awareness programme?
5. Does the provision of fish farming information contribute to improvement on fish farming?
6. What are the challenges facing the assessment of information needs of fish farmers.
7. Do fish farmers appreciate the role played by extension officers in providing agricultural information?

Yes ( ) No ( )

If YES, comment briefly

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**APPENDIX VI: UNIVERISTY RESEARCH AUTHORIZATION**



KENYATTA UNIVERSITY  
GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

P.O. Box 43844, 00100  
NAIROBI, KENYA  
Tel. 810901 Ext. 4150

Internal Memo

FROM: Dean, Graduate School

DATE: 24<sup>th</sup> June, 2019

TO: Machanje David Isenjia  
C/o Library & Information Science Dept.

REF: E65/27460/2013

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

We acknowledge receipt of your revised Research Proposal as per our recommendations raised by the Graduate School Board of 22<sup>nd</sup> May, 2019 entitled "Assessment of information needs of small scale fish farmers in rural areas: Case of Kakamega County".

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

  
ANNBELL MWANIKI  
FOR: DEAN, GRADUATE SCHOOL

C.c. Chairman, Department of Library & Information Science

Supervisors:

1. Dr. Martin Gichugu  
C/o Department of Library & Information Science  
Kenyatta University

AM/ik

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KENYATTA UNIVERSITY  
GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

P.O. Box 43844, 00100  
NAIROBI, KENYA  
Tel. 8710901 Ext. 57530

Our Ref: E65/OL/27460/2013

DATE: 24<sup>th</sup> June, 2019

Director General,  
National Commission for Science, Technology  
and Innovation  
P.O. Box 30623-00100  
**NAIROBI**

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR DAVID ISENJIA MACHANJE – REG. NO. E65/OL/27460/2013.

I write to introduce David Isenjia Machanje who is a Postgraduate Student of this University. The student is registered for MLIS degree programme in the Department of Library and Information Science.

David intends to conduct research for a MLIS Project Proposal entitled, “Assessment of information needs of small scale fish farmers in rural areas: Case of Kakamega County”.

Any assistance given will be highly appreciated.

Yours faithfully,

  
PROF. ELISHIBA KIMANI  
AG. DEAN, GRADUATE SCHOOL

AM/ik

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**APPENDIX VII: RESEARCH PERMIT**

**NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

**AC 3153**

**OFFICIAL RECEIPT**

**Station:** Nairobi **Date:** 01/Feb/2020

**Received from:** DAVID ISENJIA MACHANJE

**KES:** \*\*\* One Thousand only \*\*\*

**On Account of** Research Permit Fees ref 0000-0002-8456-0851

**Vote Head** R-43

USD

Kshs 1,000

AC<sub>NO</sub>

Cash/Cheque No MPESA Pay bill  
Item A-1-A

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**APPENDIX VII: RESEARCH PLAN**

<b>Activity</b>	<b>May 2017</b>	<b>June 2018</b>	<b>July 2018</b>	<b>April 2019</b>	<b>April 2019</b>	<b>May 2019</b>	<b>July 2019</b>	<b>Feb. 2020</b>
<b>Concept development</b>	■							
<b>Concept presentation</b>		■						
<b>Development of the proposal</b>			■					
<b>Proposal presentation</b>				■				
<b>Collection of data</b>					■			
<b>Data analysis</b>						■		
<b>Dissertation writing</b>							■	
<b>Dissertation submission and examination</b>								■

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**APPENDIX IX: BUDGET SUMMARY**

<b>No.</b>	<b>Description</b>	<b>Units</b>	<b>Number</b>	<b>Cost</b>	<b>Totals (Kshs.)</b>
I.	Printing and photo Copying	Months	6	4000	24000
II.	Mobile Internet Modem	Months	6	3500	21000
III.	Hiring of 6 field research assistants @ 400 a day	days	15	2400	36000
IV.	Refreshments during meetings	Days	2	7,000	14000
V.	Antivirus software	Users	1	5,000	5000
VI.	Airtime	Months	6	2500	15000
VII.	Travel & Transport	Months	6	5600	33600
VIII.	Dissertation Report	Copies	8	4000	<b>32000</b>
IX.	Overheads	10%			14300
<b>TOTAL Kenya shillings</b>					<b>194900</b>