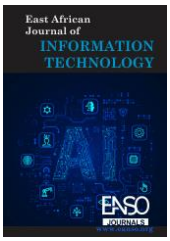

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Original Article

Assessing the Information Needs and Sources for Sustainable Livelihoods in the Fisher Communities of Lake Victoria, Uganda

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ABSTRACT

Lake Victoria, the world's second-largest freshwater lake, sustains millions of fisher communities who rely on it for their livelihoods. Every day, individuals seek information to meet various needs and demands within their communities. Information serves as a critical resource for numerous activities, including improving livelihoods and gaining essential knowledge. Fishing communities, in particular, have unique information needs related to their fishing activities and accessing different government programs and services. Information is a vital component of decision-making processes within these communities. This paper assesses and establishes the information needs of the fisher communities of Lake Victoria by identifying the different information sources consulted to satisfy these needs and are essential for fostering sustainable livelihoods. The objectives of the Study were to: identify the information needs of fisher communities of Lake Victoria; ascertain the information-seeking behavior of fisher communities of Lake Victoria; identify the major problems facing fishermen in meeting their information needs and to offer useful suggestions in enhancing the information strategies of fisher folks toward their improved and sustained impact on the state economy. Mixed-methods approach, including surveys, interviews, and focus group discussions, was used for data collection. This study aimed to identify the primary information gaps and the most trusted information sources within the fisher communities of Lake Victoria. Key findings revealed the information needs of the fishers as weather patterns, fish stock levels, market prices, sustainable fishing practices, financial support, the quality of fish, legal regulations, health and safety, security, and effective communication. It also highlights challenges faced by fishing communities in accessing digital information, high costs, inconsistent connectivity, language obstacles, and opposition to technological progress are some of the factors that contributed to this. The study revealed that fishing communities around Lake Victoria have diverse information needs, which they address through various digital technologies, including radios, telephones, televisions, and village radios. These technologies help them access information for their daily operations. The study also highlights the role of traditional knowledge, mobile technology, and local institutions in disseminating information. Understanding and addressing these information needs can empower fisher communities to make informed decisions, improve their economic prospects, and enhance their capacity to advocate for

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their rights. The paper concludes with recommendations for policymakers and stakeholders to develop tailored interventions that support sustainable livelihoods and promote the long-term health of Lake Victoria's ecosystem.

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INTRODUCTION

Lake Victoria, the world's second-largest freshwater lake, sustains millions of fisher communities who rely on it for their livelihoods. These communities pursue information on a daily basis to meet various needs and demands within their local contexts. Information serves as a crucial resource for numerous activities, such as improving livelihoods and accessing essential knowledge. Fishing communities have diverse information needs related to their fishing activities and access to different government programs and services. Information, therefore, is a vital component for decision-making processes. This paper assesses and establishes the information needs of the fisher communities of Lake Victoria, identifying the different information sources they consult to satisfy these needs. Several scholars (Zhao 1991; Kinnell et al. 1994; Mchombu 2000; Ikoja-Odongo 2001; Bourgouin 2002; Duncombe 2004; Njoku 2004) have used a mixed-method approach in studying the information needs and seeking behaviour of fisher communities to ensure the reliability of data collected. Information needs within fishing communities across the world are normally complex and, in some cases, multi-dimensional. Bradley et al. (2019), in their study, analysed the status, challenges, and prospects of high-tech data systems in fisheries management and came up with a transdisciplinary approach focusing on the collaboration problem-solving from the stakeholder level. They envisioned a system where data feedback would be utilised in driving effective innovation, expanded coverage, heightening accuracy, and lowering costs within fishery management. A few of those are: employment of IoT (Internet of Things) or nonstandard computing hardware, such as underwater sensors and drones that, for real-time data on fish populations, will be able to better optimise the targeting of certain species by fishers. Studies have consistently highlighted the critical role of information in supporting sustainable fishing practices and improving livelihoods. Also, one can state that policies and strategies are crucial in facilitating these technological integrations, providing the necessary infrastructure, training, and financial support to maximize the benefits of digital solutions in fishing communities, particularly around Lake Victoria in Uganda (March & Failler, 2022), and these interventions collectively enhance the safety, efficiency, and sustainability of fishing activities For instance, research by Finnis and Reid-Musson (2022) has emphasized the importance of access to real-time weather

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forecasts for reducing risks associated with adverse weather conditions. Their study findings affirmed that governance efforts to mitigate weather-driven fishing incidents typically focus on either shaping risk communication (e.g. public marine forecasts) or enhancing meteorological capacity among fishers through training requirements. While these efforts serve to improve awareness and decision-making capacity, weather remains only one of many factors influencing fisher decisions among other factors. Additionally, a study by Edgar et al. (2024) has underscored the need for information on fish stock assessments to ensure sustainable fishing practices and prevent overfishing. Their study findings stated that for fish stocks that are overfished, low value, or located in regions with rising temperatures, historical biomass estimates were generally overstated compared with updated assessments, and these rising trends reported for overfished stocks were often inaccurate. Thus, asserting the need for accurate information from fishing communities. Lastly, Di Cintio et al. (2022) have explored the value of information on market prices and regulations to help fishermen make informed decisions about their operations and maximise their income.

The advances in information technology have led to an explosion in information flow, resulting in the storage and accessibility of vast amounts of data across various fields of human endeavour. In fisheries, for instance, there is a wealth of information available on various websites on the Internet. However, this information tends to be one-sided, often gathered from the information needs of fishermen in developed countries. Ikoja et al. (2001) define a need as data or a set of data specifically required to enable the user to make an appropriate decision on any related problem facing him or her at any particular time. A study by Nafiz Zaman Shuva (2017) identified the information needs of fishermen in the Bay of Bengal as related to weather, fish buying and selling, entertainment, products, religious information, regulations, health, cyclones, credit, political matters, administrative issues, and fish preservation. Ikoja-Odongo, R. and Dennis N. Ocholla (2004) define information needs as a situation that arises when an informal entrepreneur encounters a work-related problem that can be resolved through some information.

Information Needs and Sources for Sustainable Livelihoods in the Fisher Communities

Fisher communities rely on various information sources to sustain their livelihoods, ensuring they can adapt to environmental, economic, and social changes. Key aspects of these include Identify their information needs of (a) fishing regulations & policies which involves understanding legal frameworks, quotas, and conservation measures (b) Market Prices & Demand were fishers need to have access to real-time pricing and consumer trends for fish products, c) Weather & Climate Data to enable them forecast and plan fishing activities and mitigate risks, d) information on sustainable fishing practices involving knowledge of eco-friendly techniques to preserve fish stocks (e) Information on Alternative livelihoods which Explores supplementary sources income (f). Financial & credit access providing information on loans, grants, and financial support for fisher folk (g) Health and safety guidelines providing information on best practices for occupational safety and disease prevention. Sources of this information come from Government Agencies like Fisheries departments that provide regulations, training, and support programs. Local Cooperatives and NGOs help with advocacy, training, and financial assistance. Market Reports and Traders provide direct insights into pricing, demand, and supply chains. Weather Forecasting Services are being provided by Meteorological agencies offering crucial climate data. Community Networks provide peer-to-peer knowledge sharing among fisher folk and Academic & Research Institutions providing studies on sustainable fishing and environmental impact. The Digital Platforms and Mobile Apps provide technology-driven solutions for real-time updates for the fisher communities.

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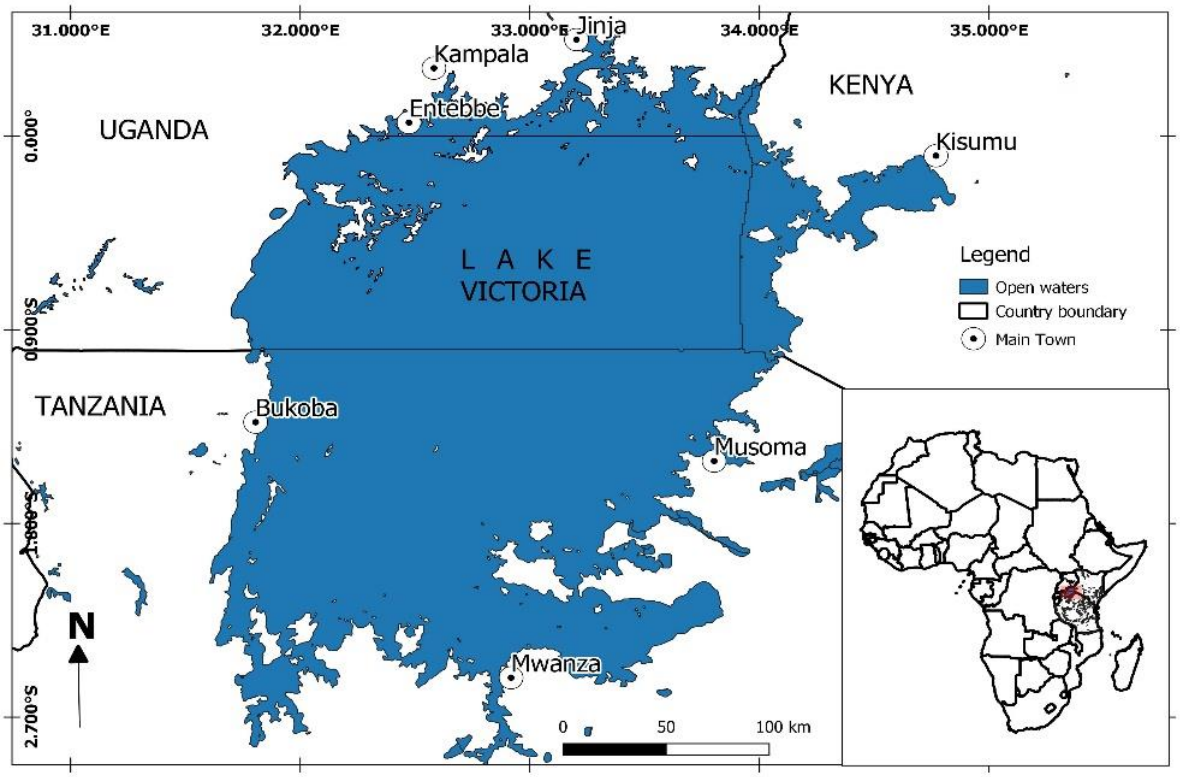
Statement of Problem

The paper sought to identify the information needs of the fishing communities of Lake Victoria, Uganda. The main reason for identifying the information needs was to get to know the information-seeking behaviours of fisher communities and the types of information they seek on a daily basis and for what purpose. One of the ways this population is disadvantaged is with regard to access to information. Factors, such as illiteracy (Das, Ray, Kumar, Begum & Tarafdar 2015; Jentoft, Onyango & Islam, 2010), poverty (Jentoft, Onyango & Islam, 2010; Khanum, 2013), and lack of access to ICTs (Mamunur-Rashid & Akanda, 2015) hinder fisher folks' unfettered access to various information sources, such as public libraries, fisheries extension departments, and online information sources.

Knowledge gap

From the literature reviewed, there was evidence that most studies focused on information needs among the fishing communities of different countries. Nothing focused on assessing the information needs and sources for sustainable livelihoods in the fisher communities of Lake Victoria, Uganda. Additionally, more studies were done on the information needs of the informal sector with a focus on Lake Albert communities and other countries. This called for the need for further investigation into the information needs and sources for sustainable livelihoods in the fisher communities of Lake Victoria, Uganda.

Figure 1: Background of Lake Victoria



It has a surface area of 68,800 km^2. The largest part of the lake, i.e. 35,088 km^2 (51%), is in Tanzania, Uganda, 29,584 km^2 (43%), and Kenya, 4,128 km^2 (6%). The lake has a shoreline length of 3,450 km: 1,150 km (33%) in Tanzania, 1,750 km (51%) in Uganda and 550 km (16%) in Kenya.

The lake's fisheries support a vibrant fish export industry, which is one of the major foreign exchange earners of the three Partner States sharing the lake. The lake is also a very important source of high protein food and employment for the people of Uganda.

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Objectives of the Study

- To identify the information needs of fisher communities of Lake Victoria.
- To ascertain the information-seeking behaviour of fisher communities of Lake Victoria.
- To identify the major problems facing fishermen in meeting their information needs
- To offer useful suggestions in enhancing the information strategies of fisher folks toward their improved and sustained impact on the state economy.

Justification for the Study

Assessing the information needs and sources for sustainable livelihoods in the fisher communities of Lake Victoria is crucial for several reasons: The Lake Victoria basin supports the livelihoods of millions of people through fishing and related activities. Understanding the information needs of these communities can help improve their economic stability. In addition to understanding the information needs, it also helps in identifying the sources and types of information that the fisher communities rely on. Researchers can promote sustainable fishing practices that preserve the lake's ecosystem while supporting local economies. The contribution of information need to the sustainable livelihood of the fisher communities is explained below:

Accessing information empowers fisher communities: Providing fisher communities with the right information enables them to make informed decisions, improve their livelihoods, and advocate for their rights and needs.

Policy Development: Policy makers can use the findings to develop tailored programs and policies that address the specific needs of these communities, ensuring that interventions are both effective and culturally sensitive.

Environmental Conservation: Sustainable livelihoods are closely linked to environmental health. Understanding and addressing the information needs of fisher communities can lead to better conservation practices, benefiting both the environment and the people who depend on it. The results from the study show a bridge between information access and practical application, ensuring that fisher communities have the resources they need for long-term sustainability and prosperity. The findings of the study provide useful insights into the nature of information needs, information-seeking behaviour and information use of fishermen and the problems facing them in their efforts to satisfy their information needs.

Importance of Understanding Information Needs:

Information is a vital component of decision-making processes within these communities. Access to relevant and timely information can significantly improve livelihoods by enabling fishers to make informed decisions about their activities and access various government programs and services. Access to timely and accurate information is crucial for the economic stability and environmental conservation of fisher communities (Smith et al., 2022). Studies have shown that mobile phones are increasingly being used to disseminate information on weather forecasts, market prices, and fishing regulations, thereby improving the decision-making process for fishers (Johnson & Wang, 2020). Local institutions, such as fisheries cooperatives and community-based organisations, play a pivotal role in information dissemination (Doe & Roe, 2021). These institutions often serve as intermediaries, providing fishers with access to relevant information and resources (Martinez, 2019). Research by FAO (2002) highlighted the importance of strengthening these local institutions to ensure effective information flow. Despite the availability of various information sources, fisher communities still face challenges in accessing timely and accurate information. Factors such as illiteracy, language barriers, and lack of infrastructure can hinder the effective dissemination of information. Addressing these challenges is essential for improving the

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livelihoods of fisher communities (Muringai, Naidoo, & Mafongoya, 2020).

Mobile Technology and Information Dissemination

The advent of mobile technology has revolutionised the way information is accessed and shared among fisher communities. Studies have shown that mobile phones are increasingly being used to disseminate information on weather forecasts, market prices, and fishing regulations, thereby improving the decision-making process for fishers. For instance, Okello et al. (2019) found that mobile technology greatly enhances information dissemination and decision-making in fishing communities around Lake Victoria.

Local Institutions and Information Networks

Local institutions, such as fisheries cooperatives and community-based organisations, play a pivotal role in information dissemination. These institutions often serve as intermediaries, providing fishers with access to relevant information and resources. Research by Onyango (2009) highlighted the importance of strengthening these local institutions to ensure effective information flow and foster sustainable livelihoods.

Challenges in Information Access

Despite the availability of various information sources, fisher communities still face challenges in accessing timely and accurate information. Factors such as illiteracy, language barriers, and lack of infrastructure (digital technologies, internet) hinder the effective dissemination of information. Illiteracy can prevent the fisher communities from accessing their information needs by not being able to read and write, and communicate using digital technologies. Equally language barrier prevents communication and information access due to the inability to speak and communicate in multiple languages. Addressing these challenges is essential for improving the livelihoods of fisher communities. Mwanja et al. (2019) discussed the need for targeted interventions to overcome these barriers and improve information access.

Information Sources for Fisher Communities

Multiple sources of information are utilised by fisher communities, including traditional knowledge, local institutions, government agencies, and non-governmental organisations (NGOs). Studies have shown that integrating these sources can lead to better outcomes for fisher communities. For example, Jansen et al. (1999) emphasised the importance of combining traditional and modern information sources to enhance sustainable fishing practices.

Contribution of Lake Victoria Fisheries to Economic Growth

The Lake Victoria fisheries contribute significantly to the economic growth, poverty reduction, and development of the region. The fishing industry generates vast amounts of income contributing to the GDPs of the East African countries, and it supports the livelihoods of millions of people involved in fishing, processing, boat building and other activities surrounding the lake. It provides food security, employment, and revenue for communities. In the year 2021, the lake provided about USD 1.1 billion to the economy of the East African Community (LVFO 2017, 2022). Studies have shown that understanding the information needs of fisher communities can help improve their economic stability and environmental conservation efforts. For instance, Abila (2000) highlighted the economic importance of Lake Victoria fisheries and the need for improved information dissemination to support sustainable livelihoods. By addressing information needs, stakeholders can enhance the economic stability and growth of these communities.

RELEVANT THEORIES AND MODELS THAT INFORMED THE STUDY.

The study's theoretical framework is drawn from theories in the field of information behaviour. These theories mention several features, which include seeking and searching for information,

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evaluating, retrieving, and using. Notable scholars of these theories include: Wilson (1981); Belkin et al. (1982); Ingwersen (1986, 1992, 2000); Dervin and Nilan (1986); Muchionini (1992). In addition, related studies have been conducted within the African context, with notable works by Kaniki (1991, 1995); Ocholla (1998, 1999); Ocholla and Ikoja-Odongo (2002); Ikoja-Odongo and Ocholla (2003).

Wilson's macro model of information-seeking behaviour, which emphasises the contextual and situational factors influencing individuals' information needs and seeking activities. Wilson's model of 1981 is based on two main proposals which states that information need is not a primary need, but a secondary need that arises out of needs of a more basic kind; and that in the effort to discover information to satisfy a need, the enquirer is likely to meet with barriers of different kinds. The model was applied in the study to understand information needs of the fisher communities, why they arise and the barriers they face in meeting their needs. The necessity of a constantly available internet connection and digital literacy training highlights the barriers that can hinder effective information seeking, aligning with Wilson's consideration of intervening variables that affect the information-seeking process. Belkin et al. (1982) originated the Anomalous States of Knowledge (ASK) hypothesis, which was based on the development of individual information needs founded in the notion of a problem situation. This theory was applied in the study of information needs of the fishing communities of Lake Victoria because individuals in the community seek information depending on their needs and problems. Similarly, Ingwersen (1982) discovered the Label-Effect and the influence of context theory, which was concerned with information requests and the second one on a typology of information needs (Ingwersen, 1986). According to the Label-Effect theory, users with well-defined knowledge of their information gap tend to label their initial requests for information verbally by means of very few terms or single concepts. This is in line with the information needs study among the fisher communities of Lake Victoria, where users know their information gap and they request it from the relevant authorities. Furthermore, Michel de Certeau's framework for everyday life practices (1984) offers a valuable perspective. This framework helps to explore how the fisher communities around Lake Victoria seek and use information, employing both formal and informal methods.

MATERIALS AND METHODS

This study employed a mixed-methods approach, combining both qualitative and quantitative research methods. This approach was to allow for a comprehensive understanding of the information needs and sources among fisher communities. Data was collected using structured questionnaires, which were administered to a sample of fisher community members. The questionnaires included both closed and open-ended questions that were used to gather data on information needs, sources, and challenges. In-depth interviews were conducted with key informants, including community leaders, representatives from local institutions, and government officials. These interviews provided detailed insights into the information dissemination processes and challenges. Focus Group Discussions (FGDs) were held with different groups within the fisher communities, such as men, women, and youth, to understand their specific information needs and preferences. Guest et al. (2016) postulated that a total of 6 FGDs are presumed to be sufficient for saturation (when we began to observe the same themes and patterns repeatedly). The study involved 2 FGDs among fisher communities, including 10 participants (5 from Women fish processors and 5 from Fisheries managers) to obtain data on fishers' information needs.

This method helped in validating and triangulating the data collected through surveys and interviews. Direct observation was used to gain a deeper understanding of the daily activities and information-seeking behaviours of the fisher communities. This included observing

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interactions at fish markets, community meetings, and other relevant settings.

Study Population

The researcher targeted a study population of 210 participants who were from the 5 riparian districts of Busia, Buikwe, Jinja, Mayuge and Mukono for the study. The study population was selected from the fishing communities of Lake Victoria, Uganda. The sample size was 194 fishers and covered men, youth, and women engaged in fishing, research/ management, processing and marketing.

Sampling Criteria

The inclusion and exclusion criteria were used while selecting the sample population. Inclusion criteria helped to identify the community of interest using the age, gender, and education levels of the various participants to be included in the study (Bell et al., 2022). The inclusion criteria revolved around the respondent categories between the ages of 25 and 55 who had acquired adequate information on the study topic. Exclusion criteria involved fishermen below the age of 25, those who were fishing at the time of data collection, and those who had not drunk were not excluded from the study.

Data Analysis

Survey data were analysed using statistical software Stata. Descriptive statistics (mean, median, mode, standard deviation) and inferential statistics (correlation, regression) were used to identify patterns and relationships between variables. Interview and FGD transcripts were analysed using thematic analysis. Key themes and patterns were identified, coded, and categorised to understand the nuanced information needs and sources within the fisher communities.

FINDINGS

The findings from the study revealed the following information needs of the fisher communities as weather conditions, health information, fishing rules and regulations, government policies and programs, security, access to market, fish catching methods, production of quality feed, fish prices, tax information, types of boats needed on the lake, methods of preservation, information on legal fishing of mukene, legal fishing nets, production of quality fish, better fish catchment areas, water temperature, information on fighting poverty, where to get proper nets, information on lake management, prices for transportation of fish, information on financial institutions for loan access, legal and illegal fishing methods, boat building, prices of boats, timber, nails and iron sheets. The information needs of the fisher communities are resolved around the following themes and sub-themes and skills.

Table 1: Information Needs of Fishing Communities of Lake Victoria

Theme	Sub-theme	Code
Information needs of fishing communities around Lake Victoria	Access to Digital Tools	Availability of Devices
	Connectivity	Internet Access
	Digital Literacy	Skills Development
	Application of Technologies	Practical Use Cases
	Information Sharing	Market Trends
	Regulatory Compliance	Keeping Updated
	Coordination and Operations	Operational Efficiency
	Quality Control	Best Practices

Nature of information gaps: It was revealed that understanding the specific information needs and **the nature of the information gaps is a crucial concern in refining the information provision**

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strategies, ensuring a more inclusive and comprehensive approach as per the following verbatim:

> "*To me, I feel that understanding the specific information needs we have is vital, and to know whether we can get it from the internet, because this can improve the ways we receive or get the information on fishing activities using digital devices*"

Sources of Information Used by the Fishing Communities/Access to Digital Tools

It was revealed that digital tools such as smartphones, tablets, and computers are vital in providing the information needs for the fishing communities of Lake Victoria, Uganda, as they enable access to digital technologies crucial for business operations. These devices facilitate real-time communication, market price tracking, regulatory updates, and access to educational resources on best fishing practices. This connectivity enhances efficiency, profitability, and compliance with industry standards, driving sustainable development within the community. The following verbatim affirms this notion:

> "*To me, it means availability of digital tools because fish processors and mongers have access to devices such as smartphones, tablets, and computers*"

Connectivity

The study found that for the fishing communities of Lake Victoria in Uganda, consistent and reliable internet connectivity is crucial to access various digital platforms and resources. This connectivity allows people to engage in activities such as market research, prompt communication with suppliers and customers, accessing weather forecasts, regulatory updates, and participating in online training programs to improve their fishing practices and business management as per the following verbatim:

> "*The way I see it is internet connectivity, because if we have reliable internet access for connecting to various digital platforms and resources like WhatsApp and other websites*"

Digital Literacy

The findings affirmed the need for training in digital literacy, which is crucial for the fishing communities of Lake Victoria, as it equips them with the skills to effectively use smartphones, tablets, and computers for business purposes, including accessing their information needs. This includes navigating the internet, using apps, and engaging with digital content, which enhances their ability to market fish, access market trends, and ensure compliance with regulations, as the following verbatim states:

> "*I think digital literacy, which gives us skills to use digital tools effectively, like navigating the internet, using apps, and engaging with digital content*

Application of Technologies

The study findings further revealed that there is a need to learn how to use digital marketplaces, such as Yalelo, whose crucial role in facilitating fish sales for the fishing communities has become significant. Knowing these platforms allow fish processors and mongers to reach a broader customer base, streamline transactions, and enhance market visibility. Leveraging these technologies enables people in the fish value chain to efficiently manage orders, conduct online sales, and access real-time market data, leading to improved profitability and market reach as stated in the verbatim below:

> *"I look at it in the way we apply these technologies, like someone opened up Yalelo, which helps to sell our fish because they come and buy from us and sell online"*

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Table 2: Meeting the Information Needs

Meeting the information needs	Frequency	Percent (%)	Cumulative frequency
Yes	172	89%	172
No	22	11%	194
Total	**194**	**100%**	

Table 2 revealed significant insights into the effectiveness of information dissemination among the respondents. A substantial majority, comprising 89% of the respondents, affirmed that their information needs were satisfactorily met. This high percentage indicated a strong level of satisfaction and suggested that the sources or methods used to provide information were highly effective in addressing the respondents' queries or requirements. Conversely, a smaller proportion, 11% of the respondents, refuted the notion that their information needs were met. This minority highlighted that there were still gaps or areas where the current information dissemination methods could be improved. Understanding their specific needs and the nature of the information gaps they experienced can help in refining the information provision strategies, ensuring a more inclusive and comprehensive approach.

Information Seeking Behaviour/Information Sharing

It was revealed that sharing relevant information about market trends, prices, and consumer preferences is a crucial need for optimising business operations in the fish value chain. This information helps them set competitive prices, target the right markets, and align their products with consumer demands, thereby enhancing their market position and profitability. Access to up-to-date data through digital platforms ensures they remain informed about industry shifts and consumer behaviour, enabling better decision-making and strategic planning. This notion flows from the following verbatim:

> "*It helps us to share information if we have access and also distribute relevant information about market trends, prices, and consumer preferences through digital channels*"

Regulatory Compliance

One of the results revealed that staying informed about regulations and compliance requirements via digital channels is essential for the fishing communities of Lake Victoria. Digital tools enable timely updates on fishing laws, environmental regulations, and industry standards from authorities like the National Fisheries Resources Research Institute (NaFIRRI) and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). This ensures compliance, sustainable practices, and avoids penalties, fostering a responsible fishing industry as stated in the following verbatim:

> "*Keeping up-to-date with regulations and compliance requirements via digital communications from authorities and industry bodies*"

Coordination and Operations

It was revealed that fishing communities can effectively coordinate with suppliers and distributors, streamlining their operations if they use digital tools well. This includes tracking daily catches, managing inventory, and scheduling deliveries. Digital platforms facilitate real-time communication and data sharing, enhancing efficiency, reducing delays, and improving overall supply chain management, which is vital for maintaining market competitiveness as a participant stated below:

> "*For me am able to know what we caught yesterday and track the catch...I also use it to coordinate with suppliers and distributors to streamline operations*"

Quality Control

One of the needs desired was information regarding quality control that fishing communities on Lake Victoria seek using digital technologies

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for timely alerts on detrimental fishing practices and quality concerns. Accessible technologies can relay warnings, ensuring sustainable fishing practices and product quality. Empowering these communities with digital tools fosters informed decision-making, safeguarding both livelihoods and the lake's ecological balance, vital for their long-term prosperity, as the verbatim below states:

> "*Quality control and best practices, because they use digital technologies to warn us about poor fishing methods, like when the army is coming*".

Objective 3: Major Problems Facing Fishermen in Meeting Their Information Needs

The study revealed that there was a problem of a lack of digital literacy skills resulting from limited educational opportunities among rural populations, which can prevent them from effectively using digital technologies. While limited educational opportunities result from fewer educational opportunities in rural areas, leading to lower levels of digital literacy and awareness.

Connectivity Issues

It was also established that accessing critical digital information is also hampered by rural regions' inconsistent and sluggish internet connectivity, which was another issue identified. This restriction makes it more difficult to communicate in real time and to access internet resources that are necessary for social connectedness, corporate operations, and education.

Access to Devices

Key informants revealed that one of the biggest obstacles to fishing communities' access to and use of digital technology is the high price of smartphones and other electronic gadgets. Many people are forced to rely on simple mobile phones because of financial limitations, which frequently lack the sophisticated capabilities needed for efficient information access, such as internet surfing, app usage, and multimedia communication. The findings further revealed that in the remote areas surrounding Lake Victoria, frequent power outages and an inconsistent energy supply provide significant barriers to the regular use and accessibility of digital technology. These disruptions limit internet resources, hinder effective communication, and hinder the growth of digitally based economic opportunities.

Cost and Technical Issues

The study findings also found that high costs of data, smartphones, airtime, and digital services greatly challenge fishmongers and processors, limiting their access to essential information.

Language Accessibility

According to the study findings, users who are experiencing language problems find it difficult to obtain important information due to the scarcity of digital material available in their native tongues. Due to the inequality in digital literacy caused by this gap, many individuals in the community are unable to fully engage in the digital world. People who are not fluent in commonly spoken languages are thus at a disadvantage and are unable to take advantage of internet services. In order to promote equality of access to information, encourage inclusion, and guarantee that all users can interact with digital platforms in an efficient and fair manner, efforts must be made to improve the representation of languages in digital material.

Objective 4: Suggestions for Enhancing the Information Strategies of Fisher Folks Toward Their Improved and Sustained Impact on the State Economy.

To enhance the information strategies of fisher folks for a sustained positive impact on the state economy, there is a need to focus on providing access to essential information, strengthening local knowledge, and promoting best practices through tailored training and education programs. This will enable fisher folks to make informed decisions, improve their fishing techniques, and contribute more effectively to the fisheries sector.

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The following are the suggestions made by the respondents in regards enhancing information strategies of fisher folks in fishing communities:

Reduce Costs

- Lower prices for airtime, data, phones, TVs, radios, smart devices, and digital technologies.
- Reduce or eliminate taxes on these items to make them more affordable.

Government and NGO Support

- Provide loans or subsidies for fishermen and community members to buy digital devices.
- Distribute phones, TVs, radios, and computers on loan or for free.
- NGOs should assist with providing communication devices and education on digital technology usage.

Infrastructure Improvements

- Enhance network connectivity and signal strength in fishing communities.
- Introduce new technologies to ensure stable and reliable internet access.
- Establish community radio and TV services for information dissemination.

Education and Sensitisation

- Develop programs to educate fishermen on the use of digital technologies.
- Promote awareness about the importance and benefits of digital tools in the fishing industry.

DISCUSSION OF FINDINGS

Information Needs of the Fishing Communities of Lake Victoria

Type of information

The findings highlight the information needs of fishing communities, focusing on weather and market-related topics. Fisher communities often seek information related to weather conditions, fish markets, fishing gear, health, and security. This information is crucial for their daily activities and long-term planning (Jones, 2021). A comprehensive list of the key points includes the following:

Market Information: The discussion covers the current market prices, any changes in these prices, the prices of fish and other related items, and the overall access to the market. This information is crucial for helping fishing communities make informed decisions and improve their economic stability.

Weather: The document emphasises the need for detailed information on daily weather conditions, the impact of weather on fishing activities, and how weather influences market prices. This knowledge is crucial for fishermen to plan their activities, ensure safety, and make informed decisions about selling their catch.

Financial Support information: This focuses on providing information on loans for fishing gear, extending government financial aid, and reducing taxes on fishing equipment are crucial steps to support fishermen. These measures aim to improve access to necessary tools, reduce financial burdens, and enhance the overall productivity and sustainability of fishing activities within the community.

Fishing Practices: Exploring innovative fishing methodologies, governmental initiatives promoting sustainable fishing practices, and education on responsible angling techniques are pivotal. These endeavours aim to safeguard aquatic ecosystems, mitigate overfishing, and ensure the longevity of marine biodiversity, fostering harmony between human activities and natural resources for generations to come.

Legal and Illegal Fishing: Regulations, encompassing environmental, recreational, and safety protocols, are vital for effective lake management. These measures ensure sustainable usage, biodiversity preservation, and public welfare. Restrictions may include fishing quotas, boating speed limits, and pollution controls,

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fostering harmonious coexistence between human activity and natural ecosystems.

Health and Safety: Accessing reliable health information is crucial, encompassing diet, exercise, and preventive care. When fishing, proper gear ensures efficiency and environmental responsibility. Safety measures like wearing life jackets and knowing CPR enhance enjoyment while minimising risks. Combined, these elements foster a healthy, enjoyable fishing experience for enthusiasts of all levels.

Security: The presence of the army significantly affects fishing activities, prompting calls for their removal from lakes. Their departure could mitigate illegal fishing, ensuring sustainable practices. However, such a move necessitates strategic planning to maintain security while fostering environmental conservation and supporting local livelihoods dependent on fishing.

Communication: Improving communication channels regarding fishing practices, governmental policies, and community updates fosters transparency, cooperation, and informed decision-making. This exchange of information ensures sustainable fishing practices, compliance with regulations, and community engagement, ultimately contributing to the well-being of marine ecosystems and coastal communities.

This extensive compilation underscores the critical requirement for precise and prompt data to enhance fishing methodologies, foster economic resilience, and bolster the holistic welfare of fishing enclaves, underscoring the interconnectedness between information availability and sustainable livelihoods within these communities.

Analysis of the Findings in Relation to the Sustainable Livelihoods of the Fisher Communities.

The findings of this study have several important implications for the sustainable livelihoods of fisher communities around Lake Victoria. Analysing these findings can provide insights into how to enhance their economic stability, environmental conservation, and overall well-being.

Economic stability

Access to Timely and Accurate Information: Access to accurate and timely information on weather conditions, fish stock levels, market prices, and fishing regulations is crucial for economic stability. When fishers have reliable information, they can make informed decisions about when and where to fish, how to price their catch, and how to comply with regulations, thereby increasing their profitability and reducing risks.

Digital Tools and Connectivity: The availability of digital tools such as smartphones and reliable internet connectivity facilitates real-time access to market information and regulatory updates. This connectivity allows fishers to communicate efficiently with buyers, suppliers, and regulatory bodies, enhancing their market reach and operational efficiency.

Financial Access and Literacy: Improved access to financial services such as loans, credit, and insurance, coupled with financial literacy programs, enables fishers to invest in better equipment and technologies. This can lead to increased productivity, better management of resources, and economic growth.

Environmental Conservation

Sustainable Fishing Practices: Promoting sustainable fishing practices through the integration of traditional ecological knowledge with scientific information can help preserve the lake's ecosystem. Educating fishers on sustainable methods and providing them with the necessary resources and support can lead to more responsible fishing practices, ensuring long-term environmental health.

Policy Development: Policymakers can use the study's findings to develop tailored programs and policies that address the specific needs of fisher communities. By focusing on sustainable practices and environmental conservation, these

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policies can help protect the natural resources on which the communities depend.

Community Empowerment

Digital Literacy and Skills Development: Training in digital literacy equips fishers with the skills to effectively use digital tools for business purposes. This empowerment enables them to access and utilise information, market their products, and comply with regulations, thus improving their livelihoods.

Strengthening Local Institutions: Empowering local institutions, such as fisheries cooperatives and community-based organisations, can enhance their role as information intermediaries. Strengthened institutions can facilitate better information flow, provide necessary support and resources, and advocate for the rights and needs of the communities.

Policy and Infrastructure Improvements

Targeted Interventions: Addressing barriers to information access, such as illiteracy, language barriers, and lack of infrastructure, through targeted interventions can significantly improve the livelihoods of fisher communities. Providing multilingual information services, visual aids, and infrastructure improvements like solar-powered devices and charging stations are some examples of effective interventions.

Public-Private Partnerships: Encouraging public-private partnerships can lead to innovative solutions and investments that enhance information access and technology use in fisher communities. These partnerships can support sustainable development and economic growth by providing resources and expertise.

Overall, the study's findings highlight the critical role of information access in promoting sustainable livelihoods for fisher communities. By addressing their information needs and providing the necessary tools and support, stakeholders can empower these communities to achieve economic stability, environmental conservation, and improved quality of life.

Recommendations

Suggestions for improving information access and addressing the identified needs.

The study recommends the following:

Enhancing Digital Infrastructure

This should be done by investing in improving digital infrastructure to ensure consistent and reliable internet connectivity for fishing communities. This can be done in collaboration with telecom companies to extend network coverage to the fishing communities and rural areas. There is also a need to set up community internet hubs with free or affordable access for the rural communities.

Promote Digital Literacy programs.

This can be achieved by implementing community-based digital literacy programs to equip fishers with essential skills for using digital tools effectively by organising workshops and training sessions on digital literacy, developing instructional materials in local languages and using visual aids to cater for diverse literacy levels.

Strengthen local institutions

Empower local institutions, such as fisheries cooperatives, to serve as key information intermediaries. Implementation should be done by providing resources and training to local institutions to enhance their capacity in information dissemination. Secondly, by encouraging collaboration between local institutions and external agencies for knowledge exchange.

Develop Tailored Information Services

Create information services specifically designed to meet the needs of the fishing communities. Mobile apps and SMS services should be used to provide real-time updates on weather, market prices, and fishing regulations and to establish local radio programs and community noticeboards to disseminate information.

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Foster Public-Private Partnership

Encourage partnerships between the government, private sector, and NGOs to support information access initiatives. Developing joint projects aimed at enhancing information infrastructure and services. Provide incentives for private sector investment in digital solutions for fishing communities.

Address Barriers to Information Access

Implement strategies to overcome barriers such as illiteracy, language, and lack of infrastructure. This should be done by offering multilingual information services and making use of visual and audio aids to cater to different literacy levels, and improving infrastructure by providing solar-powered devices and charging stations.

Promote Sustainable Fishing Practices

Educate communities on sustainable fishing methods and the importance of environmental conservation by conducting workshops and seminars on sustainable fishing practices. Provide educational materials and resources on environmental conservation.

Enhance Financial Access

Improve access to financial services such as loans, credit, and insurance for fishers. Partner with financial institutions to develop tailored financial products for fishers. Offer financial literacy programs to help fishers manage their finances effectively.

Monitoring and Evaluating Information Services

Establish mechanisms for continuous monitoring and evaluation of the effectiveness of information services. Set up feedback systems to gather input from the community on information services. Regularly review and update information services based on community feedback and changing needs.

These recommendations aim to improve overall information access, empower the fisher communities with necessary skills, and support sustainable livelihoods through enhanced infrastructure, education, and collaboration.

Policy Recommendations

Enhance Digital Infrastructure

The study suggests enhancing Digital Infrastructure for the fishing communities. This should be done by improving and expanding digital infrastructure to ensure consistent and reliable internet connectivity for fisher communities. Reliable internet access is crucial for fisher communities to access timely information on weather conditions, market prices, and fishing regulations. Enhancing digital infrastructure will facilitate better communication, market research, and access to online resources.

Promote Digital Literacy Programs

To address the unique needs of fisher communities, it's essential to implement digital literacy programs tailored specifically for them. These programs should focus on developing skills for the effective use of digital tools. By providing training in digital literacy, fishers can gain the ability to navigate the internet, use relevant applications, and engage with digital content. This will significantly enhance their capacity to access market information, comply with regulations, and improve their business practices.

Support Traditional Knowledge Integration

It is crucial to integrate traditional ecological knowledge with modern scientific information in resource management and decision-making processes. Traditional knowledge is a valuable asset for sustainable fishing practices, and by combining it with scientific data, we can achieve a holistic approach to resource management. This integration will empower communities to make informed decisions, ultimately enhancing their ability to sustain their livelihoods and protect the environment.

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Strengthen Local Institutions

It is essential to strengthen local institutions, such as fisheries cooperatives and community-based organisations, to serve as effective information hubs. These institutions are pivotal in disseminating information and providing resources to fisher communities. Strengthening these institutions will lead to effective information flow and support sustainable livelihoods.

Develop Tailored Information Services

There is a need to develop and provide tailored information services that address the specific needs of fisher communities, including weather forecasts, market prices, and regulatory updates. Tailored information services will provide fishers with relevant and timely information, enabling them to make better decisions and improve their livelihoods. These services should be accessible through multiple channels, including mobile technology.

Foster Public-Private Partnership

It is important to encourage public-private partnerships to invest in and support initiatives that enhance information access and the use of digital technology in fisher communities. By fostering collaboration between the public and private sectors, innovative solutions and investments can be realised to improve information access and technology utilisation. This, in turn, will drive sustainable development and economic growth in these communities.

Address Information Access Barriers

To overcome barriers to information access, such as illiteracy, language barriers, and lack of infrastructure, it is vital to implement targeted interventions. Addressing these challenges is crucial for improving the livelihoods of fisher communities. These interventions should include multilingual information dissemination, the use of visual aids, and infrastructure improvements.

Promote Sustainable Fishing Practices

It is essential to develop and promote policies that encourage sustainable fishing practices and environmental conservation. This is because sustainable fishing practices are crucial for the long-term health of Lake Victoria's ecosystem and the livelihoods of fisher communities. Policies should focus on raising awareness, providing training, and supporting environmentally friendly practices.

Facilitate Financial Access

Improve access to financial services for fisher communities, including loans, credit, and insurance. Access to financial services will enable fishers to invest in better equipment, technologies, and practices, leading to improved productivity and economic stability.

Monitor and Evaluate Information Services

It's essential to establish mechanisms to monitor and evaluate the effectiveness of information services provided to fisher communities. Regular monitoring and evaluation will ensure that information services remain relevant, effective, and responsive to the changing needs of fisher communities. Feedback from the communities should be used to continuously improve these services. These policy recommendations aim to enhance the information access, digital literacy, and sustainable practices of fisher communities around Lake Victoria, thereby supporting their long-term economic stability and environmental conservation.

Implications to Theory

Wilson's Macro Model of Information-seeking Behaviour

The study findings have significant implications for Wilson's macro model of information-seeking behaviour, which emphasises the contextual and situational factors influencing individuals' information needs and seeking activities. The critical role of digital tools like smartphones, tablets, and computers in facilitating access to real-time communication, market data, and

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instructional resources among fishing communities around Lake Victoria illustrates the importance of technological infrastructure in shaping information-seeking behaviours. According to Wilson's model, these digital technologies act as enablers that help individuals efficiently meet their information needs. The necessity of a constantly available internet connection and digital literacy training highlights the barriers that can hinder effective information seeking, aligning with Wilson's consideration of intervening variables that affect the information-seeking process.

Furthermore, the study underscores the diverse capabilities and benefits provided by mobile phones, such as facilitating market access, financial transactions, and communication, thereby fostering informed decision-making and promoting sustainable livelihoods. This aligns with Wilson's focus on the interplay between information-seeking behaviour and the broader social and economic environment. The identification of challenges like high costs, inconsistent connectivity, and limited digital literacy as barriers to information access also supports Wilson's model, which acknowledges that various constraints can impact individuals' ability to seek and use information effectively. The suggested interventions subsidising data plans, enhancing infrastructure, and providing digital literacy training correspond with the model's emphasis on removing obstacles to improve the information-seeking process. Overall, the study reinforces Wilson's macro model by demonstrating how technological, economic, and educational factors collectively influence the information behaviour of fishing communities.

CONCLUSION

Understanding and addressing the information needs of fisher communities can empower them to make informed decisions, improve their economic prospects, and enhance their capacity to advocate for their rights. By fostering sustainable livelihoods and promoting the long-term health of Lake Victoria's ecosystem, this study contributes to the broader goal of achieving sustainable development in the region.

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