

Assessment of Fisherfolk Information Seeking Behaviour with Mobile Phone for Improve Extension and Advisory Services

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Abstract

The study assessed information seeking behaviour of fisherfolk with mobile phone in fishing communities around Kainji Lake basin, Nigeria. Primary data was generated through interview schedule from 165 respondents and analysed with descriptive and factor analysis. Result revealed that mobile phone improved information seeking behaviour of fisherfolk with associates in the fishing communities than with outsiders in government establishment. Kinds of information sought with mobile phone cut across economic, social and health issues in fish market, social gathering, fish catch/gear, health, weather and security related matters. Pattern of information seeking revealed regular use of close associates than extension workers. Close associates mostly contacted with mobile phone for information were fellow fisherfolk (64.2%), family members (64.8%) and community members (55.8%) but weak with fisheries institute (4.8%) and extension agents (0.6%). Fisherfolk rated voice call as the most effective medium in information seeking over flashing, SMS, voice message, video and pictures. Result of factor analysis categorised the challenges into poor financial status, inadequate knowledge and skill, poor network services and lack of energy to recharge mobile phone batteries. It is recommended that extension providers should use the established effective medium and pattern of information behaviour to package and disseminate messages to meet needs of fisherfolk in the lake basin. Interim measure is to provide tool free mobile lines to improve contact and trust to strengthen rapport. Also, mobile network operators should reduce tariff, improve quality of services as well as incorporate training in their social responsibility and promotion strategies for fishing communities to benefit.

Keywords: mobile phone, fisherfolk, fish, information seeking, Africa

1. Introduction

Information has emerged as one of the topmost resources needed for successful economic activities in combination with labour, capital, knowledge, and infrastructures. Fisherfolk that derive their livelihood in artisanal fishery is among those in need of high quality information to take informed decision to work smarter and intelligently. Roopchand (2013) in CRFM Technical & Advisory Document Series define fisherfolk as people who perform different types of work and have different roles in the fishing industry. Hoffmann et al. (2009) view information as processed data that reduce uncertainty at the user level. While Gachie et al. (2006) clarified that “operational information” is information that is practical, concrete and able to help solve existing problems. As such, fisherfolk should seek for operational information from reliable sources to update knowledge and facilitate decision making in the adoption process. Quality information should be credible, relevant, accurate and timely to add value to knowledge in decision process. In this regard, Solano et al. (2003) made known that throughout the phases of the decision-making process, farmers prefer different information sources for problem detection, seeking for problem solutions, seeking for new practices and seeking for opinion.

Wilson (2000) defines information seeking behaviour as the purposive seeking for information as a consequence of a need to satisfy some goal. Vergot et al. (2005) clarify that the source of information was an individual or institution that originated a message. Above clarification shows that information seeking is a personal effort undertaken to find solution to identified needs through a source. Information seeking is a premeditated attempt by the seeker to get operational information that is relevant and useful to take informed decision to resolve complications. To seek is to ask, look, demand and search for information to be better informed on specific issue.

Consequently, information seeking behaviour helps to understand subjects' pattern of information behaviour, facilitate the design of information dissemination within the established sources, reduce the chance of decision made on incomplete or erroneous information (Hill, 2009). Also, it enables subjects obtain reliable information more quickly and easily within short time (Solano et al., 2003). Therefore, extension service providers need to understand the information seeking behaviour of fisherfolk to improve information packaging and delivery.

Information seeking and utilisation through mobile phone technology which exist in infrastructure, services and applications provide opportunities for fisherfolk in fishing communities to unlock their economic vulnerability in fisheries livelihood. According to OECD (2001) globally definition of a fishing community is substantially dependent on, or substantially engaged in, the harvest or processing of fishery resources to meet social and economic needs; and includes fishing vessel owners, operators, crew and fish processors that are based in such community. Clay and Olson (2008) sum fishing communities' vulnerability thus "as populations of many fish species worldwide have declined, the price of input has increased, and coastal development has mushroomed, fishing communities have suffered economic and social vulnerability". Vulnerability of fishing communities is complicated by fisherfolks' information poverty linked to their neglect, lack of access, availability and affordability to services from the public and private extension agents.

Recent GSMA (2015a) report revealed that as at 2015 in Sub-Saharan, there exist 386 million mobile subscribers (41% penetration), 23% mobile internet penetration, 160 million adopted smartphones. Torero (2013) showed that as at 2009 in Nigeria, 88.3% of urban households and 60.3% of rural households had acquired mobile phone, but GSMA (2015b) report showed that current mobile penetration rate stood at 31% in 2015. Interestingly, empowerment of remote riverine fishing communities with mobile networks supports their mobile phone acquisition and usage to enjoy mobile services and applications in health, finance, disaster, agric-news. In view of this trend, Verma et al. (2012) asserted that information and communication technology (ICT) tools especially mobile telephony is the best methods for providing information on agricultural activities. Also, Campaigne et al. (2006) said that mobile phone offers a more reliable and cost effective tool for serving farmers' needs on information compared to internet. As a result, different mobile phone tools has been deployed in agricultural extension mobile services to deliver messages to agricultural communities like SMS, voice call, video and voice recorder (Saravanan, 2010; Fafchamps & Minten, 2012; Ganesan et al., 2015). Labonne and Chase (2009) reported that a World Bank study conducted in the Philippines found strong evidence that purchasing a mobile phone is associated with higher growth rates of incomes in the range of 11%-17% measured through consumption behaviour. Abila et al. (2011) reported that in Lake Victoria, Kenya, mobile phone was used to enhance fish market information service between 2009 and 2010 to stakeholders in fishery value chain through short message sending (SMS) supplied by 165 fish markets and landing sites which was relayed from database 24 hours and 7 days a week. Abila and group added that the visible effect of the multi institutional mobile phone project were increased fish species price by 25%, 91% and 137%; increased income by 30%; reduced post-harvest loss from 5% to 4.5%; generated revenue of \$2,550.00 (200,000) Kenya shilling (Ksh) from 20,000 SMS and made profit of 39,700 Ksh. Also, Muthiah et al. (2015) provided another example of mobile agricultural information dissemination to five delta districts in Tamil Nadu State, India, through recorded voice messages delivered to crop farmers' mobiles at zero costs including feedback voice calls. Details of the mobile voice message project relayed between August, 2012 to July, 2013 revealed that a total of 3,833,650 recorded voice messages were disseminated in government scheme (29.53%), best practices (27.12%), fertilizer (23.36%), pesticide application (10.88%), crop insurance (5.80%) and seed varieties (3.31%) which was adopted by 54.0%, yet to adopt (4.00%) and no adoption (42.0%).

In the context of study, a fishing community is a traditional small-scale and family-based fishing village with fishers, processors and marketers in riverine. Previous studies in the area revealed the following characteristics found in the community; low education, early marriage, dominant Muslims, low income, middle age and speak Hausa language (Ifejika, 2012). Fisherfolk in the lake basin comprises of indigenous and migrants from northern and southern states in the country. Also, fisherfolk remain one of the marginalised rural dwellers in agricultural communities due to negligence by the three tiers of government in infrastructure provision like schools, health, road and extension delivery services by change agents. For instance, the Nigeria Federal Ministry of Agriculture and Rural Development (FMARD) in 2012 used mobile phone platform called "E-wallet System or Paper Vouchers" to distribute seedlings and fertilizers to 1.2 million crop farmers within 120 days through SMS alert out of 4.5million national farmers' in the database (Ifejika, 2015). As such, fisherfolk suffer information poverty, denial of productive assets and wallop in abject poverty. In spite of the odds, these fisherfoks produce over 65% of domestic fish production from inland water bodies consumed in the country. Above scenario prompted the

study to verify how mobile phone is aiding fisherfolk in information seeking in riverine communities around the lake basin. The specific objectives were to;

- Determine the kind of information they sought.
- Ascertain the people they contact for information.
- Verify the effectiveness of mobile phone tool in information seeking.
- Ascertain challenges in the use of mobile phone.

2. Study Area

Kainji lake is one of the popular inland freshwater sites for capture fishing in the past forty-five years in northern Nigeria. The lake covers an area of 1250 km² and is located at longitude 9°50'-10°55'N and latitude 4°23'-45'E in Niger and Kebbi States, northern Nigeria (Okoye, 1992). In 1996, Kainji lake fish production was 38,246 tonnes which accounted for 12.36% of capture fishery production in the country. Kainji lake fish is dominated by clupeids, tilapinnes and citharinus (du Feu & Abayomi, 1996). Tonnes of these fish caught are processed by smoking and transported weekly from New Bussa (Niger) and Yauri (Kebbi) respectively to some cities in the country like Onitsha and Enugu in south east, Lagos in south west, Ilorin and Kaduna in the north central, Nigeria. The lake has twenty fish taxon for fishing which provides livelihood to 286 fishing villages, 5,499 fishing entrepreneurs and 12,449 fishing assistants (Abayomi & du Feu, 1996). Also, 115 of the fishing villages and 1,975 fishing entrepreneurs were found in the western side of the lake. On gear, they reported that the lake had 9,278 fishing canoes, 18,655 gill nets, 1,560 drift nets, 753 beach seine, 5,548 cast nets, 7,400 longlines, and 36,979 fishing traps. It shows the volume of fishing activities fishers, fish processors, marketers, and other auxiliaries in the value chain engage and value of fish catch in lake basin put at ₦1.147 billion Nigeria Naira. According to Ifejika (2012) mobile network providers found in the area are MTN, Glo, Airtel and recently is Etisalat making it four.

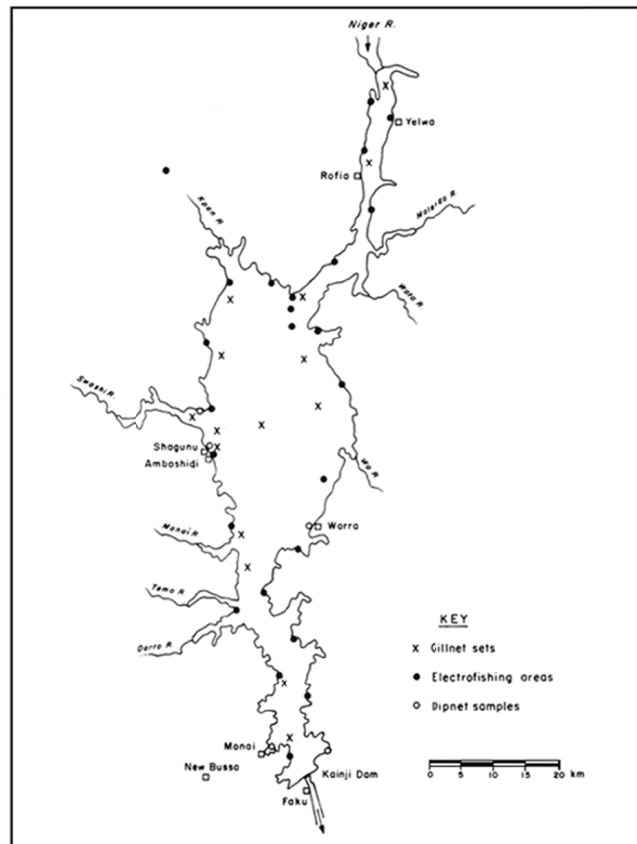


Figure 1. Study area

3. Methodology

Multistage sampling technique was adopted in the study which was carried out around Kainji lake basin. First was stratification of the lake into east and west stratum and western stratum was purposively chosen due to presence of telecommunication service providers' network in some communities. Next was random selection of eleven (11) communities out of 40 identified with telecommunication networks for the study from 115 fishing villages in the western stratum of the lake. The population of the study comprised of all fisherfolk in the selected eleven fishing communities whereas the sample size were mobile phone owners in the communities estimated at 280. From the sample size of 280, respondents were determined using the formulae; $n = N/1+N (e)$ by Israel (1992). Based on the formulae, the respondents for the study were 165 fisherfolk which was randomly selected from the villages thus; Mallale (18), Bussawa (16), Musawa (14), Monai (17), Gwatanwara (9), Kaya (27), Sakajinka (12), Yunawa (5), Tunga Angulu (9), and Tunga Alhaji Ibrahim (18). Primary data was elicited with interview schedule through interview by enumerators' fluent in 2010. Collected data was analysed with descriptive and inferential tools of frequency, percentage and factor analysis as presented in tables.

4. Results and Discussions

Table 1 displays kind of information sought with mobile phone. As shown, respondents sought multi-dimensional information which revolves around fisheries livelihood and non-fishery issues. Top request was fish market information (70.3%) followed by social gathering information (51.5%), household items information (43.0%), fish catch/gear and health information's (24.2%) respectively whereas the least sought information was on weather (23.7%) and security (18.8%). Market information sought was on fish demand, price, supply and new markets whereas financial information sought was on loan, bank alerts and debtors for payment. Fishing information sought revolve around rich fishing ground, gear price, usage of ban gears, while social information was on meeting and weddings. Corroborating the finding on kinds of information sought with mobile phone were studies by Abila et al. (2011), Ifejika et al. (2009), and Jesen (2007). Labonne and Chase (2009) assert that farmers equipped with information have a stronger bargaining position within existing trade relationships in addition to being able to seek out other markets. The finding exposes the diversity of information needs as well as the pattern of information packages for fisherfolk in the riverine community to improve their economic, health and social activities in the area. Moreover, provision of market information will facilitate easier access to market prices, possibly network with fellow fisherfolks and negotiate better prices.

Table 1. Kinds of information sought with mobile phone

	Yes (%)	No (%)
Fish market information	116(70.3)	49(29.7)
Financial information	49(23.9)	116(70.3)
Social gathering information	85(51.5)	80(48.5)
Fish catch and gear information	40(24.2)	125(73.6)
Health information	40(24.2)	125(75.8)
Household items information	71(43.0)	94(57.0)
Weather information	49(23.7)	116(70.3)
Security information	31(18.8)	134(81.2)

Source: Responses from field survey (2010).

Entries in Table 2 are on the people contacted for information through the mobile phone. As shown, mobile phone enabled respondents' to reach out to diversified people within and outside the community to seek for information. It confirmed Hill (2009) finding that farmers sought information from three to nine sources to understand the process for adoption before taking decision. Close associates in fisheries were popular people contacted for information dominated by fellow fisherfolk (64.2%), family members (64.8%) and people in the fishing communities (55.8%). Confirming the result on the use of close associates in work place and community to seek for information were Leckie et al. (1996); Solano et al. (2003); Verma et al. (2012). In the words of Leckie et al. (1996), professionals, such as engineers, nurses, physicians and dentists rely on co-workers and knowledgeable colleagues in their search for work-related information. Probably, they trust and rely on information sought from known and experienced sources than unfamiliar source among associates. However, external people in government with technical information had poor contacted with fisherfolk through mobile phone for information

sharing such as extension agents (0.6%) and Fisheries Research staff (4.8%). Observed weak information seeking from government agencies portrays poor extension contact with fishing communities prevalent in public extension services in the country. Patel et al. (2010) found that small farmers in rural India preferred to obtain information from known and trusted experts rather than from other farmers in a field study of Interactive Voice Forum. This is buttressed by Ganesan et al. (2015) finding that 92.50 per cent of the farmers felt the information received could be trusted compared to contrary view by 7.50 per cent on recorded mobile voice messages sent by government extension agency in India. Public and private extension service providers should emulate exemplary mobile phone packages seen in Lake Victoria, Kenya and delta districts of Tamil Nadu, India to design appropriate advisory services to empowered fisherfolk with technical and social information needs in the lake basin.

Table 2. People Seek information with mobile phone

	Yes (%)	No (%)
Fellow fisherfolk (fishers, friends, marketers, processors)	106(64.2)	59(35.8)
Family members (spouse, children, relatives)	107(64.8)	59(35.2)
People in fishing communities	92(55.8)	73(44.2)
Health workers	40(24.2)	125(75.8)
Money lenders	51(30.9)	114(69.1)
Fisheries research staff	8 (4.8)	153(95.2)
Extension agents	1 (0.6)	164(99.4)

Source: Responses from field survey (2010).

Table 3 shows response on mobile phone tools effectiveness in information seeking among respondents. Pooled score discloses that the most effective mobile phone tool for seeking information was voice call (44.26%), followed by flashing (32.26%) and SMS (22.58%) whereas the least was multimedia (0.89%). High usage of voice call tool to seek information attests to respondents' competency to use verbal communication tools and underutilise non-verbal and picture communication mediums such as SMS, video and voice messages. High usage of flashing (call me back) suggests their inability to buy credit or top up due to lack of money which is a sign of poverty. Poor usage of media tools like video, camera and voice message were indication of lack of skill and ignorance. For instance, Donner (2007), confirmed the practice of giving deliberates 'missed calls' or 'flashing' or 'paging' to others has long been a cost reducing measure whereas Ifejika (2012) established 98.8% use of voice call by fisherfolk. Abila et al. (2011) confirmed effective use of SMS by fish workers to send messages in fisheries innovative platform. Also, effectiveness of mobile phone voice call and SMS was confirmed among fisherfolk by Ifejika and Oladosu (2011). Muthiah et al. (2015) confirmed that crop farmers found recorded mobile phone voice messages very satisfactory (99%), better (62.50%) and usefulness (52%). Above evidences attest to using the right mobile phone medium to share the right message to the right audience to make positive impact.

Table 3. Response on effectiveness of mobile phone tools in seeking information

Mobile phone tools	Good (%)	Better (%)	Best (%)	Pooled Score (%)
<i>Adequate content</i>				
SMS	42(25.5)	25(15.4)	17(10.3)	84(22.52)
Voice call	3(1.8)	13(7.9)	149(90.3)	165(44.24)
Flashing	80(48.5)	20(12.0)	20(12.0)	120(32.17)
Video/picture/voice message	4(2.4)	0(0.0)	0(0.0)	4(1.07)
<i>Timely contact</i>				
SMS	41(24.8)	27(16.4)	14(8.5)	82(22.10)
Voice call	2(1.2)	15(9.1)	148(89.7)	165(44.47)
Flashing	85(51.5)	15(9.1)	21(12.7)	121(32.62)
Multimedia tools	3(1.8)	0(0.0)	0(0.0)	3(0.81)
<i>Clear message</i>				
SMS	42(25.5)	27(16.4)	17(10.5)	86(23.12)
Voice call	5(3.0)	16(9.7)	143(86.7)	164(44.08)
Flashing	82(49.7)	16(9.7)	21(12.7)	119(31.99)
Multimedia tools	3(1.8)	0(0.0)	0(0.0)	3(0.81)

Source: Responses from field survey (2010).

Table 4 shows factor analysis of challenges experienced in the use of mobile phone in fishing communities. As revealed, the factors were categorized into four components namely; financial challenges, energy challenges, human capability challenges and quality of services challenges. Factors under financial challenges have high loading on consume money (.827) and high tariff (.619) with severe consequences on mobile phone users in the fishing communities. Second category of factors is on lack of energy supply with high loading on lack of power (.613) and difficulty to recharge battery (.612). Absence of energy in the fishing communities add to financial burden of mobile phone owners and users that pay (₦30.00 to ₦50.00) to recharge battery as well as waste man-hour, time and energy to trek distances to recharge phone battery. Observed lack of energy infrastructure is critical for recharging of phone battery to enable fisherfolk communicate. The third category of factors is human incapability with four challenges; lack of knowledge to operate some phone functions with loading of (-.372) is the most sever followed by phone pilfering (-.038), waste of time (.756) and lack of technician (.323). Low knowledge on written communication is responsible for low use of text message and picture to communicate by respondents. The fourth categories of challenge dwell on quality of services provided by mobile network operator. Prominent and most severe among them is poor network services (-.479), trailed by low quality handset (.587) and fake recharge card (.521). To overcome the identified challenges, there is need for collaboration among key actors; beneficiaries, service providers, mobile phone operators, mobile phone software developers and government. Fisherfolks need to acquire cost saving mobile phones and training to improve capability and skill on the use of multimedia tools and applications. Mobile phone operators should improve quality of service to reduce financial wastage suffered by subscribers, checkmate the incidence of fake recharge cards and reduce the tariff. Present democratic government should tackle the problem of power and road network in fishing communities around the lake basin.

Table 4. Result of factor analysis on challenges encountered in the use of mobile phone

Variables	Poverty	Lack of Energy to recharge battery	Lack of skill & knowledge	Poor network service
High Tariff	.619			
Increased expenditure	.827			
Lack of power		.613		
Difficulty to recharge phone battery		.612		
Lack of technicians			.323	
Waste of time			.756	
Lack of knowledge			-.372	
Phone pilfering			-.038	
Low quality handset				.587
Fake recharge card				.521
Bad network				-.479

Source: Field survey (2010).

5. Conclusion and Recommendation

The study provided empirical evidence that fisherfolk are in desperate need of varieties of information to support fishery livelihood activities in fishing communities. Mobile phone access in the riverine communities has improved information seeking behaviour of fisherfolk among peers but found to be low with extension and fisheries experts outside their domain. Therefore, opportunities provided by mobile phone mediums are enormous to design effective fisheries information dissemination based on established pattern of seeking information. Both fisherfolk and mobile network providers have responsibility to improve the identified challenges in capacity, infrastructure and quality of service. Mobile phone operators should restructure their promotion and corporate responsibility strategy to benefit fisherfolk through training and low tariff and improve service. Concerned change agent in fisheries extension in the lake basin should step-up extension contact with fishing communities as well as establish tool-free mobile phone units for fisheries information sharing with the fisherfolk and others.

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