



Assessment of Fishermen's Use of Information and Communication Technologies (ICT) in Doron-Baga, Borno State, Nigeria

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ABSTRACT

Digital and other electronic technologies are transforming our economies, societies and people's lives. Technology has had an especially profound impact on the information and communications activities that have always been central to sustainable development. This study assessed the use of ICT tools amongst fishermen in Doron-Baga, Borno state. The population of the study comprised 785 registered fishermen from Doron-Baga fishing community. Samples of the study consist of seventy-one respondents which include fifty-three (53) fishermen in Doron-Baga, eleven (11) agricultural extension officers and seven (7) lecturers in fisheries and aquaculture were selected through a random sampling technique. The instrument for the collection of data was a structured questionnaire, developed by the researcher on the assessment of ICT usage amongst fishermen in Doron-Baga. The data collected were analysed using frequency counts, percentage, mean and standard deviation. The result showed that the most frequently used ICT tools are mobile phones and radio while GPS, Remote sensing, and Sonar were not used. Also the study revealed that Fishermen lack of expertise with ICT, Insufficient knowledge of appropriate software, and Lack of confidence in using ICT, amongst others are factors that hinders fishermen readiness to use ICT. The study has therefore concluded that fishing in ICT is still at its infant stage in Doron-Baga despite its benefits are well understood.

Key words: Assessment, ICT, Fishermen, Doron-Baga

INTRODUCTION

Technology has had an especially profound impact on the information and communications activities that have always been central to sustainable development. Information and Communications Technologies (ICTs) refer to technologies that facilitate communication and the processing of information by electronic means and includes radio and television to telephones (fixed and mobile), computers and the Internet. The major activities in Doro-Baga are fishing and farming. Ndamu (2013) reported the annual fish production it at 82,000 tonnes per annum using a market survey in Doro-Baga fish markets

In fisheries, new ICTs are being used across the sector, from resource assessment, capture or culture to fish processing and commercialization. Some are specialist applications such as sonar for locating fish, others are general purpose applications such as Global Positioning Systems (GPS) used for navigation and location finding, mobile phones for trading, information exchange and emergencies, radio programming with fishing communities and Web-based information and networking resources. A wide range of technologies can be adapted and introduced in all but the most remote communities and once appropriated by users, can have positive impacts on their lives. The use of ICT for development goes beyond direct support for income-generating activities. ICT for pro-poor development can be a powerful means of reducing people's vulnerability of fostering equity and social inclusion and in mobilizing communities to take charge of their own development. In conjunction with traditional communications activities such as meetings and theatre, community radio, video/television, mobile phones, telecentres and print publications can be used to share information, especially marketing information (checking fish prices), and knowledge, as well as raise

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awareness and stimulate discussion of issues such as gender, health, education, local development and diversification of income-generation. ICTs (particularly mobile phones and the Internet/telecentres) also has an important role to play in connecting migrants with their home communities. Food and livelihood security issues and the lack of extension support for fishers and fish farmers can be addressed through information networks. New opportunities can emerge from combining mobile and newer networking technologies. Programmes and policies supporting further development of ICTs in fishing communities and across the sector more broadly must link effectively between relevant stakeholders from local to international levels be designed to truly cater for the needs of the poor and lead towards more responsible fisheries.

Information played an important role in all societies since the dawn of civilization. The world is undergoing an Information Communication Technology (ICT) revolution, a revolution that has enormous socioeconomic implications for the developed and developing countries. ICTs play a vital role in the development of the status of agriculture and allied areas. ICTs range from advanced modern technologies, such as GPS navigation, satellite communication, and wireless connectivity, to older technologies such as radio and television. Different initiatives in ICTs have been taken up which would also help in expanding and developing the fisheries technologies to the farmers (Gilligan, 2006). However, the rural people still have difficulties in accessing crucial information in forms they can understand in order to make timely decisions (Kari, 2007). New information and communication technologies are generating possibilities to solve problems of rural people and also to promote agricultural production by providing scientific information to the farmers. But the rural communities still lack basic communication infrastructure. Information is a powerful tool nowadays. ICT's ability to respond to the informational needs of the community cannot be denied (Kari, 2007). This indeed will enhance their knowledge regarding everything. ICT can be the key to disseminate the right information to the right people in the right form. Grimes (2000) emphasized that ICT has the ability to provide opportunity to the community, including the fishermen to learn new things and this will produce knowledgeable fishermen (k-fishermen). ICT is able to provide information such as imminent disaster, weather, wave height, wind speed, potential fishing areas and daily market prices. In Ghana, for example, fishermen use ICT to check from their agents and the customer from various parts of the country where the price is better (Abissath, 2005).

Information and Communication Technology's ease of use process reduces the illiteracy problem among fishermen (Patterson *et al.*, 2008). Use of computers in literacy education can enhance the uptake of literacy skills for a number of reasons (Rossiter and Bagdon, 1999). Since ICT is able to provide fishermen with immediate feedback, learners of literacy can proceed more quickly and effectively than otherwise. Using ICT programs, the fishermen need and interests can be met since the fishermen can work dependently, flexibly, and at their own pace, developing both oral and writing skills and at the same time as learning to read. In addition, ICT can be fun to use, especially for fishermen who have never used them before, so it can encourage fishermen to participate in literacy education and can motivate them to continue to learn thereby increasing the rates of retention of literacy (Ellie, 2006)

Information and Communication Technology produce easier, faster and cheaper communication. The Internet manifests itself in various, often powerful, ways. Nowadays it is possible for a housewife with no higher education to set up an online shopping to market her home-based tailoring business and it is also possible for a university student studying in the city to interact with her family in the village via email and Skype Rahayat (2000), and without doubt fishermen also can have access to all of these services. New advances in telecommunications, notably wireless connections through satellite and terrestrial technology, are expected to progressively help to overcome the problem of affordable access to telecommunications in rural areas in developing countries, and doubtlessly will profit the community in the rural setting including the fishermen (Akinsola *et al.*, 2005). On top of it, ICTs can help to overcome or reduce barriers in

communication associated with distance and isolation (Rose, 1999). ICT can bring learning resources and information to the fishermen instead of making the community travel to the places of learning. This allows fishermen to learn in their own workplace and in their own time. ICTs can also provide opportunities for interactive communication and networking. It also offers opportunities for information from around the world to be generated locally to suit local situations, thus enhancing its relevance (Ballantyne, 2007).

Studies by Cooper (2006) Furuholt and Kristiansen (2007) and Owo (2010) revealed that ICT users are more likely to be well-off and better educated than non-users and, that men are more likely than women both to access and to use the Internet regularly. In both developed and developing countries, the Internet penetration rate among younger people is substantially higher than that among older people (Loges and Jung, 2001). Fishermen with a bigger access to the ICT are expected to have a bigger share of Internet usage in developing countries. Furthermore, geographic location also affects access to and use of the Internet, with more affluent regions having highest Internet penetration rates than poorer ones (Gilligan, 2006). Musa (2008) noted that the rural community will become skilled if they are exposed to ICT training and usage and this will narrow the digital divide between rural and urban community and the same case also can be applied to the fishermen where they must be frequently exposed to ICT trainings and seminars if they are requested to be ICT skilled. Furthermore, to have frequent ICT training skills is important to reduce the digital divide as it has been emphasized by Carey *et al.* (2002), where they revealed that the number of ICT training skills attended have a significant effect on the ICT usage

Information and Communication Technology has also been acknowledged as a critical catalyst, tool and enabler especially for social- economic growth. According to Lyazi (2009), ICT impact has been massive and offer access to digital technologies. Its social and economic impact goes beyond connectivity since it empowered grassroots with all kinds of information meant to bring about economic and social growth. ICT has also played a big role in promoting gender equality through sensitization programs, have equipped people with skills based on the knowledge they disseminate and also provide employment to qualified community members; this is good impact. Subsequently, ICT can aid fishermen in enhancing their productivity. Through ICT, for example, agriculture, community are able to find out immediately how much they earned during a harvest, and computerization has resulted in improved management and cost savings in fertilizer stocks. ICT has the potential for many applications in the rural areas, including allowing fishermen access to information that could improve their livelihood, and access to government services via the internet. Rao (2004) and Abdul Razaq *et al* (2009), in their study noted that ICT offers remarkable opportunities for the alleviation of poverty and employment generation as well as producing higher achievement among those who master it. Fishermen could greatly increase productivity with access to information on improving fisheries inputs, weather, markets, new production techniques, and farming technologies. ICT tools such as sonar, GPS and Fisheries remote sensing for example will tell exactly information such as location, quantity and species of the tracked fish and this for sure will save cost, time and energy of the fishermen. According to Norizan (2009), ICT will enable e-entrepreneurship where e-transactions and e-skills to enhance the socioeconomic status of the communities via the development of websites, e-payment gateways and also e-market

Lowrey (2004) explained on how the fishermen in Guinea have admitted that ICT is now considered as more powerful weapon in fighting foreign poaching trawlers in their fishing areas compared to their machine-gun. Previously they are helpless when there are foreign poaching trawlers in their areas and sometimes they are firing their machine gun as an expression of frustration. But now with the assistance of Global Positioning System (GPS), the fishermen are able to provide the coastguard station the exact location of the foreign poaching trawlers and with the information the coast guard officers are able to intercept the intruders. From the above background, it is therefore important to assess the fishermen's ICT use in Doron –Baga, Borno State. The objectives of the study are to determine: the most frequent used ICT tools amongst

the fishermen in Doron-Baga, factors hindering fishermen readiness and confidence in using ICTs and the perceived benefits of ICT by the fishermen. The research questions are:

1. What are the most frequently used ICT tools amongst the fishermen in Doron-Baga?
2. What are the factors hindering fishermen readiness and confidence in using ICTs?
3. What are the perceived benefits of using ICT by the fishermen?

METHODOLOGY

The study was carried out in Doron-Baga is located in the Lake Chad Basin area, North East, Kukawa local government, Borno State Nigeria. It is located at latitude 13° 7' 7.7" N and longitude 13° 51' 23.7" E (Wikipedia, 2016). Doron-Baga is approximately 196km away from Maiduguri, the Borno State capital.

The study used descriptive survey design. The population of the study comprised of seven hundred and eighty-five (785) registered fishermen from Doron-Baga fishing community (Fishermen Association, Baga, 2014). Samples of the study consist of seventy-one (71) respondents which include fifty-three (53) fishermen in Doron-Baga, eleven (11) agricultural extension officers and seven (7) lecturers in fisheries and aquaculture were selected through a random sampling technique. The instrument for the collection of data was a structured questionnaire, developed by the researcher on the assessment of ICT usage amongst fishermen in Doron-Baga. The data collected was analysed using frequency counts, percentage, mean and standard deviation. A norm of 2.5 was set as standard for rejection or acceptance of an item. Any mean rating above 2.5 is considered as agree while mean rating below 2.5 is considered disagree.

RESULTS

Table 1 shows the frequency and types of ICT used by fishermen. The largest number of respondents (56 out of 71 or 78.9%) responded to be using Mobile phone and radio very frequent. Nine respondents out of 71 or 12.6% said they use fish remote sensing frequently, while six respondents (8.5%) said they use do not frequently use a computer. None of the respondents said they use GPS and Sonar.

Table 1: Frequency and Type of ICT Used by Fishermen

Frequency of Use	No. of Subjects	Percentage (%)	Type of ICT	Classification of Subjects
Very frequent	56.0	78.9	Mobile phones & radio	Users
Frequent	09.0	12.6	Fish remote sensing	Non-users
Not Frequent	06.0	8.5	Computers	Non-users
Never	-	0.0	GPS, Sonar,	Non-users

Table 2 shows that the most prominent factor hindering fishermen's readiness and confidence in using ICT. All the items enumerated (item 7-11) were agreed by the respondents as responsible for hindering fishermen readiness and confidence in using ICTs. These include Fishermen lack of expertise with ICT, Insufficient knowledge of appropriate software, Lack of confidence in using ICT, amongst others.

Table 2: Factors hindering fishermen readiness and confidence in using ICTs

Items	\bar{X}	SD	Remark
Fishermen lack of expertise with ICT	3.60	0.88	Agree
Lack of confidence in using ICT	3.50	0.79	Agree
Insufficient knowledge of appropriate software	3.00	0.69	Agree
Insufficient knowledge of how to use ICT equipment	2.93	0.85	Agree
Lack of knowledge of how to evaluate the use and the role play by ICT in fishing	3.10	0.67	Agree

Table 3 shows the perceived benefits of ICT by the fishermen. The items in Table 3 were all agreed by the respondents as the benefits of using ICT in fishing. Six items were identified as the perceived benefits of ICT by the fishermen. The fishermen responded to the items on Likert's five-point rating scale. The opinions of the fishermen were rank according their perceived benefit of using ICT. ICT helps to gain and share fisheries information such as market price, online application and weather conditions were ranked as the most perceived benefits of ICT by the fishermen. ICT helps fishermen to trace their path, provide information on the aquatic environment, including mapping of areas of ecological importance, help fishermen to boost catch, provide gains and share fisheries information and it helps in observing water temperature.

Table 3: The perceived benefits of ICT by the fishermen

Items	\bar{X}	SD	Remark
ICT helps fishermen to boost catch	2.90	0.62	Agree
ICT helps fishermen to trace their path	3.46	0.79	Agree
ICT Provide information on the aquatic environment, including mapping of areas of ecological importance	3.30	0.60	Agree
It helps in observing water temperature	2.70	0.89	Agree
It helps to gain and share fisheries information such as market price online application and weather conditions	3.80	0.72	Agree
Provide gain and share fisheries such as professional advice services and business opportunities amongst colleague and data agencies	2.80	0.65	Agree

DISCUSSION

The frequency of access to ICT shows that a considerable number of fishermen access mobile phones and radio very frequently (78.9%), fish remote sensing (12.6%), computers (8.5%), and sonar (0%). This is an indication that using ICT such as mobile phone and radio by the Nigerian fishermen is relatively high. This corroborates the findings by (Gray and Souter, 2004) that fishermen came out positive with regards to the use of mobile phones. It also confirms the assertion that availability usually determines access. If the ICTs is available, this will motivate the fishermen to access them than when they are not available. However, ICT Tools such sonar and GPS were not used by fishermen in Doron-Baga. This finding differs from the findings of Musa *et al.* (2011) and Raidah *et al.* (2013) who found out that remote sensing, computers, GPS and sonar were highly used by fishermen in Malaysia. Geographical positioning system is used in marking the spots where a lot of fish can be caught, fishermen can return exactly to the right place whether it's daylight or in the dark. The GPS unit will indicate the latitude, longitude, altitude, surface speed, sunrise and sunset times, odometer and accuracy warning system, but despite these advantages, GPS was not used by fishermen in the study area. The factors which contribute to the use of ICT by the fishermen are its availability, ease of use, perceived benefits and knowledge (Maccoby, 2013).

Fishermen also perceived ICT as being very useful. This may be connected to the fact that it is perceived as improving fishermen's performance. On the issue of factors hindering fishermen readiness and confidence in using ICTs, the study revealed that Fishermen lack of expertise with ICT, Lack of confidence in using ICT, Insufficient knowledge of appropriate software and Insufficient knowledge of how to use ICT equipment amongst others. This finding agreed with the study conducted by Maccoby (2013) who discovered that Lack of confidence in using ICT, Insufficient knowledge of appropriate software and Insufficient knowledge of how to use ICT equipment were among the factors hindering fishermen readiness and confidence in using ICTs. ICT tools such as GPS, Sonar system, wireless set, fisheries remote sensing, computer, internet and mobile phone have indeed offered huge benefits for fishermen. It should be noted

that online services provided by ICT facilities are vital for fishermen. Such online services include e-training, e-extension, e-aquaculture, VMS Web, e-fishermen and host of others.

Conclusions

ICTs such as GPS, sonar, wireless sets, fisheries remotes sensing, computers, internet and mobile phones can be a great help to the fishermen in conducting their enterprises. Based on the findings of the study, ICTs such as mobile phones and radio very frequently used by the fishermen in the study area while remote sensing, computers, GPS and Sonar were not used. The use of information communication tools has made it possible to overcome barriers of space and time, and opens new possibilities for fishermen. The use of such technology is increasing, and it is now possible to deliver training and teaching to a widely dispersed audience by means of on-demand two-way video over terrestrial broadband networks. This is because fishermen have now perceived its usefulness. This study, therefore concluded that fishing with ICT is still at its infant stage in Boron-Baga despite its benefits are well understood.

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