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Information Sources Dissemination and Utilization Patterns of the Artisanal Fishery Sector in Benue State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors AEA and CNE wrote the introduction, the research protocol, the design of the study and in addition carried out the research procedure and field trips. Authors AEA and CNE also handled the literature and reviewed the literature. Author VNO examined the research design, validated the instrument and handled subsequent corrections from the editor. All the three authors read and approved the final manuscript.

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ABSTRACT

The descriptive survey design using questionnaires and structured interview were adopted as instrument for data collection. Population of study consisted of 391 with the determined sample size of 198 fishermen. Frequency count, simple percentages and mean (\bar{x}) were used to analyze the data. The study revealed traditional sources of information dissemination as contact with colleagues, information disseminated in market places and fishing festivals while modern sources of information dissemination included radio, mobile phone use and newspapers. The shortage of public librarians, libraries and extension workers, language barrier and lack of motivation were challenges associated with information dissemination and utilization by artisanal fishermen in Benue state. The study recommended that effective sources of information dissemination should be employed as this will enhance dissemination and utilization by artisanal fishermen and improve fish production rate in Benue state.

Keywords: *Information; dissemination utilization; artisanal fishery sector.*

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1. INTRODUCTION

The Artisanal Fishing subsector of agriculture has been part of human life. Fish farming falls under the animal production sector of agriculture which can also be described as aquaculture. Aquaculture is the farming of aquatic organism like fish. Fishes are known source of protein and fish farming involves the planned, growth and cultivation of fishes in tanks or proper enclosures for harvesting fishes as food or commercial purpose. Economically, healthy fishes are fundamental to achieving not only the restrained fish stocks but other accepted objectives for the fishery sector, such as improved livelihoods, exports, fish food security and economic growth. Fishery development in Nigeria is new even though there is evidence that a fishing company operated from the coastal waters of Lagos long before 1915 [1]. However, deliberate effort at developing the countries fisheries can be said to date back to the Second World War, when because of naval blockades of the high seas, the then colonial administration decided to develop the country's local resources, including fisheries [2]. A fisheries organization was then established in 1941 as a fisheries development branch of the agricultural department of the colonial office and a senior agriculture officer was appointed to conduct a survey of the industry and its possibilities [3]. The headquarters was then sited in Lagos the then capital of Nigeria. Establishment of Fisheries Companies by the government or individuals is usually for economic purposes. For some people, it is source of daily income and a means of livelihood. These groups of fishermen are called artisanal fisheries which sometimes used interchangeably with small scale fishery. Demuyck cited in [4] provided some overview of the general characteristics of artisanal fisheries as being labour intensive, involving low capital input, little technology and marketing and distribution are handled by non-fishing intermediaries. He also said that artisanal fishery is in the local area. They have low status occupation, their communities suffer from poor community infrastructure, poor living conditions and the risk aspect is always present. Therefore, there is need to disseminate adequate and necessary information to artisanal fishermen in terms of sustaining, improving, drying, preserving, marketing and distributing their fish and other necessary information to develop better their business. Dissemination and utilization of information to artisanal fishery sector, is perhaps the bedrock for the improvement of fish production rate. In essence, information is power, and when acquired, disseminated and utilized can help to increase fish production rate in the society [5,6].

However, dissemination of information can only be realistic through the use of information sources. Information sources in this study are channels through which information is disseminated to the targeted group. [7] advocates that, information source to an institution or individual is a means of creating or bringing a message that will be useful in tackling occupational challenges. Information disseminated is one of the major challenges to artisanal fisheries sector, due to the fact that formation is in printed media which in most cases hinder its effective utilization, since majority of the artisanal fishermen cannot read nor understand English language very well [8]. However, [9,10] advanced that, farmers rely on a variety of sources of information, for example, the fisher folks in Cross River estuaries are always listening to "The Radio farmer" a local Radio programme in which most rural workers use as an effective source of information dissemination. [11,8] revealed that people in the Isoko riverine area of Delta state rely heavily on town criers, community meetings, friends, relations, church meetings, village meetings, conventions and personal experience, word of mouth and ceremonies for information. In addition, [12] point out sources such as radio, television and extension agents as the most effective sources of information dissemination.

They also said that the effectiveness of sources of disseminating information to artisanal fisheries sector depends largely on assistance of information agencies such as libraries, extension agents, Non-Governmental Organizations (NGOS) and mass media.

[13] Opined that extension agents who do not understand the local language/dialect of the people will not be able to communicate with the local folks without some kind of interpretation which is sometimes distorted from the original version. Artisanal fishermen may not have access to certain sources such as radio and television through which some of the extension information is disseminated. This is emphasized by [14] who reported the low level of fisheries information broadcast in radio programs around the Kanji Lake. In other words Dissemination of information to fishing communities is not so reliable; therefore the fishermen turn to rely mostly on the indigenous knowledge of fishing to supply fish to the public. The [15] agreed that even if information reaches the public, it is difficult to ensure that they will listen to it, understand and take appropriate actions. Despite these, public library/extension workers may reach out to artisanal fishermen through organization of workshops in local dialect, holding discussion classes, creating awareness of new innovations and having personal contact with them through an interpreter.

Furthermore, [16] points out other sources of disseminating information to artisanal fishermen such as training centers, local meetings, extension agents, agricultural research stations, film shows, radio, newspapers, neighbours, friends, government officials and cooperative societies. Also, library as one of the major sources of information has an enormous role in the dissemination of information. However, Ngulube, cited in [17] advocates that library movement in Africa is generally weak due to the fact that librarians often neglect the needs of the rural communities in their information dissemination drive. Most of the previous studies carried out did not recognized library as one of the sources of information to artisanal fishermen. Therefore utilization of this source as a means of information dissemination is not noticed among fishing communities.

Specifically [18] investigated factors influencing adoption of fisheries innovation by artisanal fishermen in coastal areas of Ogun State, Nigeria. Research design employed was survey design. Data were obtained from one hundred and twenty fishermen using simple random sampling techniques. The instrument used for the study was structured interview schedule. Descriptive statistics such as simple percentages and means were used. The study revealed that extension workers use Agricultural Development Programs to disseminate information to fishermen. However, not all villages have extension services. Conclusively, the study revealed that fishermen were aware of the extension agencies in their village but not all innovation disseminated were adopted.

On the other hand, [19] studied the information needs and information dissemination seeking behavior of fishermen in Lagos State, Nigeria. Survey design was adopted and instrument for data collection were: observation, questionnaires supported with interviews and examination of relevant records. Population of study was 500 fishermen and simple percentage was used to analyze the data. The study reviewed the major sources of information dissemination as colleagues, friends, neighbors and relatives. It concluded that the means and sources of information seeking found in fishermen are no longer adequate to meet advanced technology in the field and this can be detrimental to the profession. Therefore, the use of radio, television, library and mobile phones within their rural fishing communities was recommended.

In another study, [10] carried out a study on information provision and dissemination patterns among migrants' fisher folks in Cross River estuary, Nigeria. Survey design was used for the

study. Population of the study consisted of artisanal fisher folks scattered in 68 fishing villages. Random sampling was used for the selection of fisher folks. Instruments for data collection were semi-structured questionnaire and interview. Descriptive statistics such as simple percentages were used to analyze the data. The findings revealed the preferred information channels to fishermen as radio and extension agents. The researchers articulated the reasons for preferring these information sources as radio accessibility, reliability and affordability while the strength of extension agents as information source lies in their ability to make information clear and also are best suited to offer knowledge. Some fishing community areas of Nigeria has been studied, but these local government areas have not benefited from such studies.

However, [20] studied Plants used in artisanal fisheries on the Western Mediterranean Coasts of Italy. The aims were to record traditional knowledge on plants used in fishery in these regions and to define selection criteria for plant species used in artisanal fisheries, considering ecology and intrinsic properties of plants, and to discuss the pattern of diffusion of shared uses in these areas. A total of 58 semi-structured interviews were carried out in Liguria, Latium, Campania and Sicily (Italy). Information on plant uses related to fisheries were collected and analyzed through a chi-square residual analysis and the correspondence analysis in relation to habitat, life form and chorology. A total of 60 plants were discussed as being utilized in the fisheries of the Western Italian Mediterranean coastal regions, with 141 different uses mentioned. Of these 141 different uses, 32 are shared among different localities. In some uses, species are selected for their features (e.g., woody), or habitat (e.g., riverine), etc. The majority of users were found to be obsolete (42%) and interviews show that traditional fishery knowledge is in decline. There are several reasons for this, such as climatic change, costs and reduction of fish stocks.

2. STATEMENT OF THE PROBLEM

Artisanal fisheries play a crucial role to national economy and well being in terms of provision of employment, food, a source of protein for the local populace and the country in general and income for rural dwellers. Central Bank on Nigeria [21] maintains that in previous years artisanal fisheries played a leading role in fish production in Nigeria, contributing an average of 84.2% of the total domestic output. However, the production rate of artisanal fishermen in recent times has been generally inadequate. Due to this [22] advocated that a sustainable fisheries policy was formulated in order to reduce the deficit in fish production. The rate of low production may be due to climate change. The fishermen require information that will enable them adjust to change in climate. It is not clear whether artisanal fishermen in Benue State, Nigeria have access to the needed information.

3. OBJECTIVES OF THE STUDY

The broad objective of the study was to find out information sources dissemination and utilization patterns of artisanal fishery sector in Benue state. Specific objectives were to:

1. Identify sources of information available to artisanal fishermen in Benue state
2. Ascertain the extent to which information disseminated is utilized by artisanal fishermen in Benue state.
3. Identify constraints associated with effective information dissemination/utilization by artisanal fishermen in Benue State.
4. Suggest strategies for enhancing effective dissemination and utilization of information by artisanal fishermen in Benue state.

4. METHODOLOGY

The area of study is Benue State. Benue State is located in the north central zone of Nigeria. It is located on longitude $7^{\circ} 47'$ and $10^{\circ} 0'$ East. It is also in Latitude $6^{\circ} 25'$ and $8^{\circ} 8'$ North and shares boundaries with five other states in the country namely: Nassarawa to the North, Taraba to the East, Cross River to the South, Enugu to the South-West and Kogi to the East. The State also shares boundary with the Republic of Cameroun on the South- East.

The descriptive survey design was used for this study. Population of the study consisted of all the registered artisanal fishermen in the study area totalling 391 selected from Guma 137, Katsina-Ala 123 and Makurdi 131 local government areas of Benue state. It is through the register of the union that the total population was deduced. Most fishermen in Nigeria as observed in other artisanal jobs have an association or union that caters for their interest and welfare. Individuals can fish to support their families, this is not professionalised. A professional fisherman is often registered. The registered members were used so that the population of the study can be known and definite. From the registered population a sample size of 198 was derived statistically as advanced by [23] that the sample size of a infinite population can be statistically determined using Yaro Yamene formula of

$$n = \frac{N}{1 + N(e)^2}$$

Where n= sample size

N= the infinite population

e = the level of significance (which is 0.05)

1 = Unity (which is a constant)

Therefore,

$$\begin{aligned} n &= \frac{391}{1 + 391(0.05)^2} \\ &= \frac{391}{1 + 391(0.0025)} \\ &= \frac{391}{1 + 0.9775} \end{aligned}$$

n=197.7 which is approximately 198

Therefore the sample size = 198

Total population of the study = 391.

In sampling, two techniques were used to select a sample. Purposive sampling technique was used for selection of fishing communities while random sampling technique was used to select the respondents for the study. Instruments used for data collection were; questionnaire with twenty-eight (28) items, structured questions for interview and focus group discussion (see Appendix A). Frequency counts, mean and simple percentages were employed for data analysis. Responses ranked with percentage score of 50% and above and mean value of 2.50 and above were accepted as positive decision levels.

4.1 Method of Data Collection

The instruments used for data collection in this study were; questionnaire, structured interview and focus group discussion. These instruments were designed based on the objectives of the study. Questionnaire was administered to literate and semi-literate fishermen, structured interview was granted to village heads and fishing coordinators and then focus group discussion was conducted for illiterate fishermen. The questionnaire for data collection titled: Questionnaire on Information Sources Dissemination and Utilization Patterns of the Artisanal Fishery Sector in Benue State, Nigeria (see Appendix A). Some of these questions were constructed using (4) point scaling rate as strongly agree (SA), Agree (A), Disagree (DA) and Strongly Disagree (SDA). Scores of 4, 3, 2, and 1 respectively were assigned to options above. So that any item that has a mean 2.5 and above is accepted to be positive and below 2.5 is taken to low. The number 3 of the questionnaire addressed the first objective of the study and respondents were expected to indicate Yes or No. Structured interview was granted to one community head and one fishing coordinator in each local government while focus group discussion of six artisanal fishermen per local government was conducted with illiterate fishermen. All these were based on research questions that guided the study (See Appendix A).

For data collection, the researchers trained and made use of field assistants to administer questionnaire, grant interview and conduct focus group discussion to artisanal fishermen. The field assistants were drawn from each of the 3 fishing communities in the 3 local government area of the study. This is to take care of misunderstanding and misrepresentation on language barriers. The three instruments mentioned above were used to ensure that all the sampled fishermen identified in these areas were reached for proper data collection. The structured interview and focus group discussion were conducted using the same items from the questionnaire and translated into their local language, for example Tiv language. One of the researchers and field assistants guided the group discussion of 6 artisanal fishermen using half an hour.

5. STUDY FINDINGS/ RESULTS

Data was collected using questionnaire which was administered to literate and semi-literate fishermen from the 3 local government areas studied. The first aspect of the questionnaire was on the sources through which they gain information for fishing. This was collected from 171 fishermen (respondents) as presented in the Table 1 below.

Table 1. Sources of information disseminated to artisanal fishermen in Benue state

S/N	Sources of information to fishermen	yes	Percentage (%)	No	Percentage (%)	Ranking
1.	Public libraries	38	22.2	133	77.8	8 th
2.	Extension workers	69	40.4	102	59.6	6 th
3.	Colleagues	146	85.4	25	14.6	1 st
4.	Radio	105	61.4	66	38.6	4 th
5.	Newspapers	98	57.3	66	38.6	5 th
6.	Mobile phones	105	61.4	66	38.6	4 th
7.	fishing festivals	124	80.7	47	27.5	2 nd
8.	Television	41	24.0	130	76.0	7 th
9.	Market place	107	62.6	64	37.4	3 th

From Table 1, items were ranked accordingly, from the most effective to the least sources of information dissemination. The “YES” categories with 50% and above ranged from item 3, colleagues (85.4%) ranked 1st, Item 7, fishing festivals (80.7%) ranked 2nd, Item 9, market places (62.6%) ranked 3rd, item 4 and 6 ranked 4th with radio (61.4%) and mobile phones (61.4%) respectfully. Item5, Newspapers (57.3%) ranked 5th, Item 2, extension workers (40.4) ranked 6th, item 8, television (24.0%) ranked 7th and item 1, libraries with the (22.2%) ranked 8th. This implies that information is mostly disseminated to artisanal fishermen through other sources rather than extension workers and libraries whose aim is to ensure that information gets to the targeted group at the right time of need.

Summary of the interview of village heads and fishing coordinators and focus group of the illiterate fishermen showed that they gain information for fishing through personal experience, traditional fishing festivals, community fishing competitions, fishing cooperatives, market places, and personal contacts.

Another aspect of the questionnaire was utilization of the information disseminated to the fishermen as shown in Table 2 below.

Table 2. Extent to which information disseminated is utilized by artisanal fishermen in Benue state

S/N	Extent to which information is utilized by artisanal fishermen	VHE	HE	LE	NA	Mean (x)	Decision level
1	Provision of available information facilitates access to market prices.	88	59	15	18	3.2	A
2	Through information disseminated artisanal fishermen can have access to modern fishing facilities.	65	43	42	30	2.9	A
3	Information disseminated enable artisanal fishermen to know and avoid the danger of overfishing.	87	52	33	8	3.2	A
4	Information disseminated prevents artisanal fishermen from using obnoxious fishing practices.	66	42	16	56	2.6	A
5	Information disseminated help artisanal fishermen to improve on their traditional skills of fishing.	64	63	12	41	2.8	A
6	Information disseminated enable artisanal fishermen to know the growing environmental deterioration and its damaging effects on fishing operation and seek for solution.	91	45	5	39	3.0	A

Key: VHE=Very high extent, HE=high extent, LE=Large extent, VLE=very less extent, A= Accepted.

Table 2 above shows the very high extent to which information is utilized by artisanal fishermen in Benue state. All the questions posed received very high mean scores showing that fishermen in Benue state find fishery information very useful and timely for their fish yields. The result of interview and focus group agreed with use of information on the above options in Table 2 above. In addition, they used disseminated information to improve on obnoxious fishing practices and conflicts resolution. This is because traditional methods of

fishing inherited from their forefathers destroy fish in discriminately without ensuring sustainability. This affects production rate of the artisanal fishermen.

The result of problems the fishermen encounter in getting and using information is presented in the Table 3 below. The identification of constraints to effective information dissemination to fishermen is very useful for this research. We need to identify the constraints to be able to dovetail into strategies that will alleviate the problems.

Table 3. Constraints associated with effective information dissemination/utilization by artisanal fishermen in Benue state

S/N	Constraints associated with information dissemination/utilization	SA	A	D	SD	MEAN (x)	Decision Level
1.	Acute shortage of librarians/ extension workers.	102	33	22	23	3.1	A
2.	No linkage between public libraries and extension workers.	91	36	31	22	3.0	A
3.	Lack of motivation to public librarians/extension workers	53	48	44	35	2.6	A
4.	High cost of information materials.	36	21	56	67	2.1	R
5.	Lack of rural libraries/information centers	74	32	21	53	2.7	A
6.	Language barriers	53	88	29	10	3.0	A

Key: S A= Strongly agreed, A= Agreed, D= Disagreed, S= Strongly disagreed, A=accepted R= Reject

The Table 3 above shows the constraints associated with information dissemination/utilization by artisanal fishermen. These results revealed that, items with strongly agree and agree mean scores of 2.5 and above are accepted as challenges associated with information dissemination to artisanal fishermen in Benue state. These include; acute shortage of public librarians/extension workers (3.1), no linkage between public libraries and extension workers (3.0), language barrier (3.0), lack of motivation to public librarians/extension workers (2.6) and Lack of rural libraries/information centers (2.7). Only item 4, high cost of information materials (2.1) with less mean scores of 2.5 was rejected. High cost of information materials may have been rejected largely because majority of the artisanal fishermen rely more on radio and mobile phone as the major vehicle for disseminating information. In addition, the focus group agreed on the above problems and stressed especially that they need information and even demonstration on modern ways of fishery which can be gotten through other sources of information not only through traditional means.

Therefore the strategies to enhance access and use of information are shown in Table 4 below.

Table 4. Strategies for enhancing sources, dissemination and utilization of information by artisanal fishermen in Benue state

S/N	Strategies for enhancing information dissemination/utilization	SA	A	D	SD	MEAN	Decision level
1.	Recruitment of more librarians/ extension workers to disseminate information to artisanal fishermen.	116	42	29	23	3.4	A
2.	Linkage between public libraries and extension workers.	88	59	15	18	3.2	A
3.	Identifying the most effective information sources for use	91	45	5	39	3.0	A
4.	Establishment of agricultural advisory board comprising of librarians and extension workers	65	43	42	30	2.7	A
5.	Packaging and repackaging information to artisanal fishermen.	64	64	11	41	2.8	A
6.	Establishment of rural libraries in fishing communities.	87	52	33	8	3.2	A
7.	Encouraging the use of audiovisual materials by public librarians/extension workers.	53	81	34	22	3.2	A

Key: SA=Strongly agreed, A=Agreed, D= Disagreed, SD=Strongly, A=Accepted

This table presents the strategies for enhancing the information dissemination to artisanal fishermen in Benue State. Items with the mean responses of 2.5 and above were accepted as strategies for information dissemination to artisanal fishermen. Therefore, all respondents agreed with all the items as strategies for enhancing information dissemination to artisanal fishermen in Benue state. In addition to the above agreed strategies, the focus group were of the opinion that translation of information materials in local dialects, conducting fisheries programmes at least once in a week on radio and also creating awareness about the existence and relevance of public libraries/extension workers.

6. DISCUSSION OF FINDINGS

6.1 Sources of Information Dissemination to Artisanal Fishermen

Artisanal fishermen in Benue state have various sources of information. However, only few of these sources are effectively utilized as advanced by this study. The study classifies sources of information dissemination to artisanal fishermen into traditional and modern sources. Traditionally, the study reveals the most effective sources of information disseminated as information proffered by colleagues, in the market places and during fishing festivals. The respondents indicated that the market place as where they gain information, this information gain mostly here are about the prices of fish. The fishing festival is another opportunity they have by which people can come and give them talk, especially the extension workers. These sources are always readily available to the artisanal fishermen but, may sometimes be distorted from the original version and hinder effective utilization by fishermen. This agrees with [11], sources of information to the Isolo riverine area of Delta state are heavily relied on town criers, community meetings, friends, relations, church meetings, and personal experience. While the most effective modern sources of information as revealed by the focus group discussion and interviewees are libraries, which is non-

existent in their communities and extension workers who are rarely seen in these areas. The study revealed the perceived roles of public library to extension services as provision of current and relevant journals, fisheries magazines, abstracts and summaries of its latest arrivals, pamphlets and leaflets to aid information dissemination to artisanal fishermen. Public libraries are often not keen in carrying out other responsibilities such as offering information to extension workers, since the role of government pertaining to the direct involvement of librarians in information dissemination is not well defined. [24] Agreed that, the use of librarians in the dissemination of information to farmers has always been mooted. He explained that this is because; extension workers may not be aware of the existence of librarians due to lack of collaboration and this undoubtedly affects effective dissemination/utilization by fishermen. [25] collaborating this advocated that, public libraries have a major role to play by joining with extension workers for making useful information available to farmers in view of increasing their production rate. Another way in which the artisanal fishermen can benefit from public libraries is to know how to read and write, which they can do by starting evening school.

They also knew that radio, mobile phone and newspapers are other modern methods of information sources. Recently, most artisanal fishermen prefer mobile phone due to its dual function of communicating and having an inbuilt radio to access information. However, the fishermen are often faced with the challenges of network problems and this affects effective flow of information and consequently hinder utilization of information that would increase production rate of artisanal sector in the state. Furthermore, the study revealed that libraries are only located in local government head quarters distant from the fishing communities. These libraries are not stocked with relevant and current information materials on fishing and have only one library officer and two extension workers in each local government. [24] posited that, the ratio of extension workers to farmers in Africa is abysmally low that is why a farmer may not come in contact with extension agents in five years; the farmer is therefore, denied information when it is needed and this affects production.

6.2 Extent of Information Dissemination/ Utilization by Artisanal Fishermen

The study reveals that, information disseminated to artisanal fishermen is highly utilized. If dissemination of information is effective, information made available to artisanal fishermen will spread like wide fire to all colleagues to enable them improve on their production rate as well as maintain adequate fish supply to the state. The information are needed in such area as obnoxious fishing practices, modern methods of catching fish, modern fishing facilities, fish processing, storage, preservation, fish marketing, middlemen exploitations, where to purchase tools at cheap rate, where to obtain loan, effects of weather on fishing activates, and effects of water pollution. They agreed that the area to gain information mostly is in making use of obnoxious fishing practices such as chemicals, explosives and poisons from empty shells of locus beans that before they use it to catch fish indiscriminately without reserving fingerlings for future harvest. It also destroy organisms that the fish feed on, fish nursery, fish eggs and kill fish indiscriminately thereby not giving room for continuity which results into low production rate. This is in line with [10] who opined that artisanal fishermen apply inappropriate fishing methods like chemo fishing or mass killing of fish in a bid to yield much harvester as narrated by the coordinator. They also gained information on fish processing, storage, preservation and fish processing, storage preservation and fish marketing. Before artisanal fishermen relied heavily on indigenous knowledge of processing, storage and preservation fish which in most cases exposed to infestation by insects and maggots. Lack of proper preservation of fish may lose its value as well as attract low income for artisanal fishermen. This is supported by a recent work by [20] who through interviews of

artisanal fishermen in Western Mediterranean Coasts of Italy found that traditional fishery knowledge is in decline. There are several reasons for this, such as climatic change, costs and reduction of fish stocks.

6.3 Challenges Associated with Information Dissemination/Utilization by Artisanal Fishermen in Benue State

This study has revealed the challenges of dissemination and utilization of information by artisanal fishermen as lack of public libraries and enough staff, lack of rural information and resource centres, and inadequate extension workers. . Also language barrier and lack of motivation of the extension workers were also perceived as inhibitors to information provision to the rural farmers. The study revealed that, only one (1) library officer and two (2) extension workers from each of the three (3) local government areas of study are available to disseminate information. This is a dire situation, which may result ultimately to low production rates. In agreement with this, [19] asserted that, there is acute shortage of information and extension officers in the field of information dissemination which affects production rates. The study also revealed that, public libraries/extension workers lack motivation and this may also be affecting their work. Other challenges are lack of awareness, poverty, absence of fisheries programmes on radio and lack of electricity in those communities make it difficult to use television. Similarly, the studies carried out by [26,18], reveal that lack of awareness, high cost of mobile services, lack of television, lack of electricity, abject poverty, lack of access roads are challenges faced with disseminating information to rural dwellers. However, these challenges can be alleviated by providing strategies that will enhance access to information and use.

6.4 Strategies for Enhancing Information Sources, Dissemination, and Utilization by Artisanal Fishermen in Benue State

This study revealed strategies for enhancing information sources, dissemination, and utilization by artisanal fishermen in Benue State as: identifying the most effective sources of information needed by fishermen and dissemination of same for enhanced fishery production, linking public libraries with extension workers for effective information dissemination, the establishment of agricultural advisory boards comprising librarians and extension workers to make extensive use of non-print media as a means of overcoming ineffective dissemination of information to farmers and fishermen. The establishment of rural libraries in fishing communities may alleviate information dissemination and utilization problems to farmers in Benue state. Packaging and repackaging information to artisanal fishermen may enhance utilization. The use of Audio-visual resources may help to facilitate information dissemination and utilization by artisanal fishermen. This is because most of these fishermen are semi –literate and some illiterate and information repackaged in their local languages in the form of tape recorders, CD's and DVD's can go a long way in creating lasting memories that will increase production rate of artisanal fishermen in the State. All these facilities can be made available in their community library. [11] also suggest that efforts should be made by the ministry of agriculture to employ more agriculture extension workers. In other words, the extension workers should know their local dialect and be able to interpret the necessary documents to the artisanal fishermen.

7. LIMITATION OF THE STUDY

- The study was done in only three local government areas. The study would have stood a greater degree of generalization if the study included other fishing communities in the local government area of the state.
- The use of one focus group for each local government is small for the study.

8. AREA FOR FURTHER STUDIES

- Information needs and Information Dissemination to Artisanal Fishermen in Riverine area of Benue State.
- Factors Influencing adoption of fisheries innovation by Artisanal Fishermen in coastal area of Benue State.

9. GENERALIZATION OF THE STUDY

The study can be used to study other sectors, including agricultural sectors that are of the same level as artisanal fishermen because, the study involved three information gathering procedures, questionnaire, interview and focus group. The questions and questionnaire may be modified to fit into whatever the researcher wants to investigate. With three information gathering procedures involved, it can be used in any region in Nigeria or any other countries in general provided it involves similar and small community.

10. IMPLICATIONS OF THE STUDY

Dissemination/utilization of information is paramount to artisanal fishery sector since it enhances production rate. The findings of this study have the following implications to artisanal fishery sector, public libraries, extension workers, the general public and government. Traditional and modern sources of information dissemination to artisanal fishermen were revealed by the study. However, lack of effective sources of information to artisanal fishermen will result in the decrease in production rate and there will be gross shortage of fish supply in the State while demand will be on increase. It requires the collaboration of extension work, staff of public libraries and educated members of the community to help in repackaging of information, in the language the artisanal fishermen will understand. If information disseminated to artisanal fishermen is not well packaged and utilized then the local fishermen will not produce enough for consumers and government will perpetually depend on importation of fish. It is against this background that the following recommendations were made.

11. RECOMMENDATIONS

The following recommendations are made from the findings of the study.

1. Effective sources of information dissemination such as packaging and repackaging of information in indigenous languages of the state should be deployed as this will help artisanal fishermen to improve on fish production rate.
2. Librarians should be fully involved in the direct dissemination of information to artisanal fishermen as professionals; since, they will know better where to source for current and relevant information that will improve production rate of artisanal

fishermen. Also to achieve the goal of disseminating information to artisanal fishermen, there should be linkage between public libraries and extension workers.

3. Local government authorities should liaise with Librarians to establishment local community information service centers/rural libraries in fishing communities nationwide. This will increase utilization as well as production rate.
4. Government should recruit more librarians and extension workers and also adequately motivate them to perform their function of dissemination of current and relevant information to artisanal fishermen and increase the fish production of artisanal fishery sector.
5. Adult literacy classes should be organized to educate illiterate fishermen and artisanal fishermen with low formal education background for more effective information dissemination and utilization.
6. Provision of basic amenities like electricity so that artisanal can access information through radio, television and mobile phone.

12. CONCLUSION

The dissemination of information to artisanal fishermen in the 21st century is crucial, since information is the bedrock for effective operation of any occupation. This study has established the critical role information plays in fishery production and the benefits of having timely, crucial information by fishermen. In Benue state artisanal fishermen need to gain information in areas such as modern methods of fishing, modern fishing facilities, effects of obnoxious fishing practices, fish processing, storage, preservation and marketing. There is also need for where to obtain loan, effects of weather on fishing, and effects on water pollution. The survey research method was used and fishermen were sampled from the three local government areas of Benue state. Results revealed that although both local and modern methods were used as information sources, they were not maximally effective. Results showed that information dissemination and utilization by fishermen were rife with a lot of inhibitors which ranged from disconnect between the public librarians and the extension workers, lack of adequate facilities and infrastructure such as rural information and resource centres and language barriers. Strategies were provided in line with the inhibitors to ameliorate these challenges for enhanced information provision and fishery output in Benue State of Nigeria. There is no doubt that enhancement on information dissemination and utilization will improve artisanal fishery in the three local government areas of Benue State.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX A

Questionnaire on Information Sources Dissemination and Utilization Patterns of the Artisanal Fishery Sector in Benue State, Nigeria.

SECTION A: Demographic information of Artisanal Fishermen.

Tick as applied to you.

1. Your local Government Area. a) Guma { }; b) Katsina-Ala { }; c) Makurdi { }
2. Your Occupational Specialization: a) Fishing; { } b) Fish processing, storage, preservation and marketing; { } and c) Both { }

SECTION B: Information Source and Utilization Pattern

3. Through which of the following information sources do you gain access to information needed for your fishing. Tick Yes or No.

S/N	Sources of Information	Yes	No
1	Public libraries		
2	Extension workers		
3	Colleagues		
4	Radio		
5	Newspapers		
6	Mobile phones		
7	fishing festivals		
8	Television		
9	Market place		

4. Please indicate the extent to which you utilize information made available to you concerning fishing. Tick the appropriate option as VHE=Very high extent, HE=high extent, LE=Low extent, VLE=very less extent.

S/N	Extent to which information is utilized by artisanal fishermen	VHL	HE	LE	VLE
1	Provision of available information facilitates access to market prices.				
2	Through information disseminated artisanal fishermen can have access to modern fishing facilities.				
3	Information disseminated enable artisanal fishermen to know and avoid the danger of overfishing.				
4	Information disseminated prevents artisanal fishermen from using obnoxious fishing practices.				
5	Information disseminated help artisanal fishermen to improve on their traditional skills of fishing.				
6	Information disseminated enable artisanal fishermen to know the growing environmental deterioration and its damaging effects on fishing operation and seek for solution.				

5. Please indicate in your opinion which of the following are barriers to you in accessing and utilization of information necessary for fishing. Tick the appropriate option as SA= Strongly agreed, A= Agreed, D= Disagreed, SDA= Strongly disagreed.

S/N	Constraints associated with information dissemination/utilization	SA	A	DA	SDA
1	Acute shortage of librarians/ extension workers.				
2	No linkage between public libraries and extension workers.				
3	Lack of motivation to public librarians/extension workers				
4	High cost of information materials.				
5	Lack of rural libraries/information centers				
6	Language barriers				

6. Please indicate in your opinion which of the following suggestions can enhance information sources dissemination and utilization for fishermen in Benue State. Tick the appropriate option as SA= Strongly agreed, A= Agreed, D= Disagreed, SDA= Strongly disagreed.

S/N	Strategies for enhancing information dissemination/utilization	SA	A	DA	SDA
1	Recruitment of more librarians/ extension workers to disseminate information to artisanal fishermen.				
2	Linkage between public libraries and extension workers.				
3	Identifying the most effective information sources for use				
4	Establishment of agricultural advisory board comprising of librarians and extension workers				
5	Packaging and repackaging information to artisanal fishermen.				
6	Establishment of rural libraries in fishing communities.				
7	Encouraging the use of audiovisual materials by public librarians/extension workers.				

Interview Schedule

The following questions were used in conducting interview.

1. Through which do you gain information for fishery?
2. Which areas do apply the information gained for fishery?
3. What problems do you encounter when getting or using information on fishery?
4. What ways do you think the problems can be solved?

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