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Survey on information seeking behaviour of local miners in lead poison affected areas of Anka and Maru Local government areas of Zamfara state, Nigeria

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Abstract
Purpose: This study surveyed the information seeking behaviour of the local miners in the lead poison affected areas of Anka and Maru local Government areas of Zamfara state.
Design Methodology/Approach: This study adopted survey research design, 245 local miners in the affected area were used as population of the study, and simple random sampling technique was used for the study. Self-structured questionnaire were used as instrument for data collection from respondents The instruments were validated by three experts who found the instrument valid for the study after making some corrections.
Findings: The major findings of this study indictaed that local miners needs information on accidents associated with mining such as drowning, tumbling, suffocation, rock fall and how to improve thier work through the use of modern facilities with 87% respectively. lack of access to sources of safety information, lack of time, ignorance, language barrier, cost of information and lack of infrastructures.
Implication: Recommendations includes: Government agencies need to consider how to provide better safety information services to the local miners in the area under study, and whether to make knowledge on the use of safety equipment a necessary requirement for qualifying to participate in mining activities. Adequate penalties for failure to comply with government regulations may be required to compel the local miners to ensure compliance with safety rules and regulations.
Originality/Values: The paper's originality lies in the information needs of the local miners in the lead poison affected areas of Anka and Maru local Government areas of Zamfara state, Nigeria.

Keywords: nformation, Information needs, Local miners, Information sources

Introduction
Mining is the process of bringing out useful mineral resources from the earth's crust. It is a process that involves extraction of mineral resources through excavation or digging which involves prospecting, exploration, development and exploitation of mineral resources beneath the surface of the earth, and each of these activities could be carried out on a large-scale, small-scale or artisanal level. McBell (2018) stated that miningis the extraction of valuable minerals or other geological materials from the earth, usually from an orebody, lode, vein, seam, reef or placer deposit. These deposits form a mineralized package that is of economic interest to the miner.Ores recovered by mining include metals, coal, oil shale, gemstones, limestone, chalk, dimension stone, rock salt, potash, gravel, and clay. Mining is required to obtain any material that cannot be grown through agricultural processes, or created artificially in a laboratory or factory. Mining in a wider sense includes extraction of any non-renewable resource such as petroleum, natural gas, or even water.William,George and John (2020) define mining as process of extracting useful minerals from the surface of the Earth, including the seas. A mineral, with a few exceptions, is an inorganic substance occurring in nature that has a definite chemical composition and distinctive physical properties or molecular structure. Minimg are categorises into three which includes: large scale mining, artisinal mining or small scale mining.
Large scale is a type of mining where machinaries are used to carry out mining activtities. Artisanal mining adopts manual methods of digging with hoes, diggers and shovels to look for minerals, and extraction of the minerals is done by direct hand sorting and washing in artificial ponds and other water sources. Small-scale mining differs a little; it is mechanized to an extent as the mining can be done using compressors, wagon drillers, tractors, dumpers, jugs and crushers; non standardized small-scale mining activities make use of both manual and mechanized methods.

According to Lawal (2011), most of the small scale miners that carried out mining activities in northern Nigeria are small-scale levels miners, and most of them are non-standardized and illegal.

Generally, miners are exposed to a variety of hazards such as accidents and criminal behaviour, as well as indiscriminate smoking, alcoholism and prostitution, leading to health challenges such as HIV/AIDS and STDs. Grossman (2012) has identified hazards in Nigeria. Like all other professions, miners have various needs, and they require and seek for information to meet those needs. In line with Fisher, Landry, and Naumer (2007) observations about context sensitivity of information, the information behaviour of miners will differ from that of workers in other sectors, and specific examination of this group of artisans may help policy makers improve their safety at work and their contribution to national development. One of the ways to reduce the safety challenges that confront miners is to provide them with safety information.

Miners particularly need information and training about prevention of occupational hazards, thermal stress, acclimatization, disease exposure and knowledge about the environmental and social impact of their activities. Safety information needs differ among countries, geographical zones, the miners themselves and the nature of the minerals mined. Artisanal miners are mainly hired on a day-pay basis, and they are always busy at the sites trying to beat schedules and meet production expectations. They have no time to listen to radios, watch television or read newspapers, and many of them cannot read the information leaflets sometimes provided by the government and other agencies. Miners work at odd hours; they have no regulations guiding when and how much work they do each day.The chances of getting the mineral resources they are looking for is unpredictable, and miners have to keep working, in the event that the next shovelful would provide a prize find. Moreover, most artisanal and small scale (AS) mining is illegal, and government agencies may not be committed to insure the supply of safety information to this category of persons, or may not even know where they are located in case they wouldwant to supply them with information. Artisanal and small-scale miners in Nigeria are therefore at the forefront of the problem of lack of utilization of adequate safety information about protection equipment, health-care services, accidents, geological hazards anddiseases associated with mining. Many accidents that occur in mine sites are believed to be avoidable, but miners often either do not have adequate information or are not using the information provided for them (National Academy of Sciences 2007). Furthermore, the illegal nature of artisanal and small scale mining activities might mean that the information practices of the miners would be influenced by personal consciousness and commitment to safety or by their employers' understanding and action about information about the safety of their staff. Many studies have been carried out on mining activities in Nigeria (Lawal 2011). Gathering information about issues such as exploration, excavation, exploitation and marketing of mined minerals, and many of the studies showed thatartisanal and small-scale miners do not observe safety rules. Aderogbin (2006) has stated that negligence of safety measures by artisanal and small-scale miners could probably be due to low or non-availability of the right information and their own poor attitude towards information as well as low information literacy.

However, no study has paid attention to information seeking behaviour of the miners, it is to this regard that this study would be carried out to survey information seeking behaviour of local miners in the affetced lead poison areas in Anka and Maru local government area of Zamfara state.Information needs is very vital for different categories of individual in society. The local miners especially in the affected areas of lead poison information seeking behaviour required to be identified. Thus, necessitating a research with reference to Anka and Maru where local mining take place in Zamfara State.

Purpose of the Study

1. To identify information seeking behaviourof local miners in affected areas of lead poison
2. To ascertain the sources of information by the local miners
3. To identify the factors affecting information seeking behaviourof local miners

Scope of the Study

The focus of this work is basically on the survey of information seeking behaviour of the local miners in the lead poison affected areas of Anka and Maru Local Government Areas of Zamfara State, Nigeria.

Zamfara State is an agrarian state, and traditionally most villagers relied on farming to earn a living. However, some villages were also rich in many minerals, including gold. Nowadays, the price of gold is rising and many villagers have been mining gold to earn more money. Lead is a naturally occurring heavy metal; it is mostly occupied in some areas in the state with high levels of lead. The lead poisoning is widespread, thousands of children had dangerous levels of lead in their blood, and hundreds of children and animals had died throughout the region. Zamfara State has appreciable concentrations of heavy metals in its mineral-rich rocky soils. One of the notable mineral deposits in the State is Gold. Gold mining has been on for many decades, however in recent times, it becomes a widespread and very profitable endeavour.

Literature Review

Concept of Information

Information is a necessity product for man's survival and also an indispensable product to function in a society. The arrival of information and communication technologies brought profound changes in the society and still changing. The word "information" is derived from a latin word, 'information' (to inform) in the sense of 'to give from the mind", "to discipline". "Instruct", or "teach" (Shapiro, 2002). There are a number of terms such as knowledge, facts, data, news message, etc. used in common parlance as synonymous or near synonyms for information but none of these items or definition has been universally accepted. Scholars and author have tried to defined information from their various views and professional standpoints. Aina (2013) defined information as accumulation of knowledge by human begins in all areas of endeavour that is used to solve problems and reduce uncertainty. It is what they need for clarity of uncertainty and decision making.Regardless of profession or activities, information is a necessary product for man's survival and also an indispensable product to function in a society.

Concept of information seeking behaviour

Information seeking is a process that requires an information seeker, or what might be called "personal information structures, such as a person's cognitive abilities, his or her knowledge and skills specific to a system and knowledge and skills regarding information seeking. Information is undertaken to identify a message that satisfied a perceived need. This activity may be actively or passively done when taking steps to satisfy a felt need. Igwe (2012) describes information seeking behavior as an individual way and manner of gathering and sourcing for information for personal use, knowledge updating and development. Leckie, Pettigrew and Sylvan (2006) stated that information seeking behavior is expressed in various media available in libraries e.g Encyclopedia journals and more currently electronic media. Aina (2004), opined that "the information seeking behavior of a user depends on education, access to library and the length of a time user wishes to devote to information seeking ". No matter how comprehensive the resources and services of a library are.

Information-seeking behavior refers to the various means human beings adopt in seeking, acquiring or having access to the information they require, while information use relates to actual implementation of or incorporation of information obtained into a task. Whichever is of interest to a researcher, information behavior occurs in relation to someone solving problems, meeting a need or filling an identified gap in knowledge either by, or in, oneself or another individual or organization. Information behavior describes the general attitude of people towards information: creating, seeking, editing or using information, etc. are information behaviors (Wilson, 2001).

Information need arises due to the realization of what needs to be done in order to achieve a goal or fulfil a task. This realization may involve some paraphernalia that are not at the disposal of the information seeker or an action that has to be taken, and the information seeker may require being informed about where and how to learn, know or acquire the information (Johnson 2003). The term "sources of information" suggests that information is usually kept in some places where those who need it can go and take it. An information source could be a book, a radio, the WWW and others. A source could also be visualized as an activity such as seminars, conferences and lectures, among others.

Information-seeking behavior refers to the various means human beings adopt in seeking, acquiring or having access to the information they require, while information use relates to actual implementation of or incorporation of information obtained into a task. Whichever is of interest to a researcher, information behavior occurs in relation to someone solving problems, meeting a need or filling an identified gap in knowledge either by, or in, oneself oranother individual or organization (Information need arises due to the realization of what needs to be done in order to achieve a goal or fulfill a task).

Information seeking behaviour of local miners in the areas of the research

Every human being needs information in order to survive but the information needs of one group of people might be different from another group or individuals. Information-seeking behavior refers to the pattern of response expressed of them cannot read the information leaflets sometimes provided by the government and other agencies. The miners work at odd hours; they have no regulations guiding when and how much work they do each day.

The chances of getting the mineral resources they are looking for is unpredictable, and the miners have to keep working, in the event that the next shovelful would provide a prize find. Moreover, most artisanal and small scale (AS) mining is illegal, and government agencies may not be committed to insure the supply of safety information to this category of persons, or may not even know where they are located in case they would want to supply them with information. As the preliminary investigation showed, the AS miners themselves do not want the government agencies to locate them for "fear of tax". Artisanal and small-scale miners in Nigeria are therefore at the forefront of the problem of lack of adequate safety information about protection equipment, health-care services, accidents, geological hazards and diseases associated with mining. Many accidents that occur in mine sites are believed to be avoidable, but miners often either do not have adequate information or are not using the information provided for them (National Academy of Sciences 2007).

Furthermore, the illegal nature of artisanal and small-scale mining activities might mean that the information practices of the miners would be influenced by personal consciousness and commitment to safety or by their employers' understanding and action about information about the safety of their staff. Aderogbin (2006) has stated that negligence of safety measures by artisanal and small-scale miners could probably be due to low or non-availability of the right information and their own poor attitude towards information as well as low information literacy. Information practices of the miners and their employers. It could be speculated that segmentation factors such as gender, age, marital status and level of education might relate to safety information needs, information sources, information-seeking behavior and use of information sources by artisanal and small-scale miners. It could also be further speculated that individual behavioral characteristics and attributes could explain their information behavior.

Information Sources of Local Miners

Information sources are avenues through which individuals obtain information for the satisfaction of their information needs. The nature of information need determines the information sources to be consulted/adopted. For instances, educational and academic information needs of a researcher williugpropel him to consult information sources like libraries, information and documentation centres, and the internet. The following are some list of information sources:

1. Libraries, documentation centre and information resources centre
2. The internet
3. Broadcast media of radio and television
4. Workshop centre like Churches and Mosques
5. Governmental agencies and their publication
6. Non-governmental Organization (NGOs), Community-based Organization (CBOs) and Civil Society Organization (CSOs).
7. Professional Association and Bodies,
8. Books, Monographs, Pamphlets, Journals, Newspaper, and magazines.
9. Billboards, Posters, Brochure, Handbills, Bulletins and Leaflets.
10. Lectures, Conferences, Seminars and Workshops.

11. Friends, Relatives, Colleagues, and Associations.

The availability and accessibility of the above-listed information sources, especially libraries and information centres that houses diverse categories of information materials and service delivery systems, are for the satisfaction of the information needs of individuals in the society (Qadiri and Abiodun, 2017).

Challenges to access and utilization of information by local miners

The utilization of information is processed with availability and accessibility of that information. In other words, extent of availability and accessibility of information determines the level of utilization. In addition, the use of information could also be effected by a variety of factors such as background of the potential user, motivation, professional orientation and other characteristics; and the social, political, economic, legal and regulatory systems surrounding the users (Ojedokun, 2007). There are also several other factors that act as impediments to the accessibility and utilization of information. They include (Imeremba, 2004):

1. Language: when someone is passing information across in a language which the recipient does not understand; information is likely to be hindered. Again, if a publication is done in a language which a recipient does not understand, he will find it difficult to access and use the information.
2. Cost: the cost of information records such as books, journals, newspapers, access to the internet, etc, is more and more becoming prohibitive. Disability issues can be placed under cost, because disability may not be a problem here if one has the financial power.
3. Illiteracy: if a recipient cannot read and write, this hinders him from accessing and using information.
4. Geographical Distance: Distance becomes a problem if communication facilities are lacking.
5. Censorship: this is also a serious obstacle to the access to information. When publications are censored by the government, accessibility and utilization will be affected. For instance, the former USSR government did not allow publications that were opposed to communism.
6. Ignorance: ignorance becomes a factor when you need information, and you don't know where to get that information. This shows that there is lack of information literacy skills.

Effects of poor access to information by the local miners

Mining often includes the extraction of goal, metal and other minerals resources deep under the surface, is good to have access on the information need to carry out such activities, Poor access to such information more especially by the local miners, can lead to serious injuries on the environment and human health, which can even lead to death in the near future. Apart from human health and environmental effect, local miners also need information on the strategies that will enhance the process, in other to meet the demand of the precious resource, which are crucial for our daily life. Some of the effects, that poor access to information by the local miners can causes on human health, includes lung diseases, cancer, hearing issues, injuries, heavy metal contamination. On the environmental effect, some causes includes, soil erosion, water pollution, air pollution, soil pollution, deforestation and global warming, other effects includes, effects on plants, effects on animals, effects on aquatic life and effects through the food chain etc.

Research Methodology

Research design

Survey research design was adopted for thisstudy on informationseeking behaviourof local miners in some affected areas of lead poison in Zamfara State, Nigeria. The designis interested in observing and describing characteristics or features of an event or situation without manipulating any variable. All local miners in the lead poison affected areas in (Maru and Anka) Zamfara State, Nigeria comprised the population of the study. Self-structured questionnaire was used as an instrument for data collection.The instrument was given to an expert in the field of measurement and evaluation and one from Library and Information Science profession to determine the face validity of the instrument. Modified Likert type Scale was adopted for the research. The questionnaire was analysed using percentage frequency.

Data presentattion and analysis

The data collected from respondents through questionnaire from the survey. It also presents its corresponding analysis and interpretations.

Research question 1: **Information seeking behaviour of local miners**

Instruction: Please tick the option you prefer guided by the key below:

SA: Strongly Agreed, A: Agree, Disagree, SD: Strongly Disagree

Table 1

S/N	Items	SA	A	SD	D
1.	I always seek for information to meet my safety needs at work	223(91%)	12(5%)	8(3%)	2(1%)
2.	I intend seeking for safety information	240(98%)	1(1%)	3(1%)	1(1%)
3.	I will try to seek for safety information	245(100%)	-	-	-
4.	Likely to have information needed	123(50%)	80(33%)	40(16%)	2(1%)
5.	I always try to find out the credibility of the source of my information	200(82%)	31(13%)	9(3%)	5(2%)
6.	I value my colleagues opinion on their information seeking behavior	240(98%)	3(1%)	2(1%)	-

(**Source**: Field survey, 2020)

Table above shows that 223 representing (91%) of the respondents strongly agreed that they always seek for information to meet my safety needs at work , 240 representing (98%) revealed that they intend seeking for safety information on thier job, 245 representing (100%) of the respondents made it clear that they will try to seek for safety information, 123 representing (50%) out of the respondents revealed that they likely to have information needed, 200 representing (82%) out of the total number of respondents strongly agreed that they always try to find out the credibility of the source of thier information, 240 representing (98%) out of the total number of respondents need information on current trend in mining.

Research question 2: Sources of providing information to the local miners

Instruction: Please tick the option you prefer guided by the key below:

AP: Adequately Provided, P: Provided, LP: Low Provided, NP: Not Provided

Table 2

S/N	ITEMS	Adequately provided	Provided	Low provided	Not provided
1.	Lecture/ talks	-	-	-	245(100%)
2.	T V	-	-	-	245(100%)
3.	Government agencies i.e NOA	-	245(100%)	-	-
4.	Seminars/ workshop	-	-	-	245(100%)
5.	Inter personal conversation	245 (100%)	-	-	-
6.	Associations	245(100%)	-	-	-
7.	Radio	245(100%)	-	-	-
8.	Friends	245(100%)	-	-	-
9.	Social medias	245(100%)	-	-	-
10.	Books	-	-	-	245(100%)
11.	Newspapers	-	-	-	245(100%)
12.	Charts	245(100%)	-	-	-
13.	Town crier	-	-	-	245(100%)
14.	Magazines	-	-	-	245(100%)
15.	Pamphlet	-	-	-	245(100%)
16.	Government extension workers	-	-	-	245(100%)

(**Source**: Field survey, 2020)

Table 3 above reveals that 245 representing (100%) of the local miners have respectively stated that they are not provided with the information through lecture/talks and TV, 245 representing (100%) respectively shows that they have sourced information through government agencies, seminars and workshops are not provided, interpersonal conversation, associations, radio, friends, social medias, charts. It is clearly indicated that 245 representing (100%) respectively stated that they are not provided with the information on: Books, Newspapers, Charts, Town crier, Magazines, pamphlet and government extension workers.

Research question 3: Constraints to access of information by local miners

Instruction: Please tick the option you prefer guided by the key below:

SA: Strongly Agreed, A: Agree, D: Disagree, SD: Strongly Disagree

Table 3

S/N	ITEMS	SA	A	SD	D
1.	Non availability of relevant information	211(86%)	23(9%)	4(1%)	7(3%)
2.	Computer literacy	217(89%)	2(0.1%)	8(3%)	18(7%)
3.	Lack of awareness on how to find the information	245(100%)	-	-	-
4.	Financial constraints	245(100%)	-	-	-
5.	Lack of knowledge of existence of safety information	112(46%)	89(36%)	26(11%)	18(7%)
6.	Lack of access to source of information	245(100%)	-	-	-
7.	Most relevant information is lengthy	245(100%)	-	-	-
8.	Lack of time	245(100%)	-	-	-
9.	Illiteracy	245(100%)	-	-	-
10.	Ignorance	245(100%)	-	-	-
11.	Language barrier	245(100%)	-	-	-
12.	Geographical location	245(100%)	-	-	-
13.	Cost of the information	239(97%)	1(0.4%)	1(0.4%)	4(2%)
14.	Lack of infrastructures	234(95%)	2(0.8%)	10(4%)	4(2%)

(**Source**: Field survey, 2020)

Table above shows that 211 representing (86%) of the respondents have strongly agreed that their constraints to access to information includes non-availability of relevant information, 217 respondents representing (89%) stated that computer literacy, (100%) revealed that lack of awareness on how to find the information, (100%) of the respondents respectively indicated that their constraints to good access to information includes: lack of access to sources of safety information, lack of time, illiteracy, ignorance, language barrier, geographical, cost of information and lack of infrastructures with (98%) of the respondents. The finding of this table is in line with Imeremba (2004), where he stated that some of the constraints to access to information by local miners includes: Language, Cost, Illiteracy, and Geographical Distance, Lack of infrastructure, Underdevelopment as well as Ignorance among others.

Conclusion

This study survey information seeking behaviours of local miners with particular reference to some affected areas of lead poison in Zamfara State. Safety is a major concern for artisanal and small-scale miners. Providing information to miners about what they could do to prevent risks associated with their jobs, and about how and why they need to regularly seek safety information could reduce the consequences of the risks they face. And also this may expose them to the current trends in mining sectors among others.

Recommendations

Based on the findings of the study, the researechers forward the following recommendations:

1. The routine visits of government officials to mining sites should not be focused on taxation and related issues, but should be expanded to include issues related to safety in the workplace.
2. Government agencies need to consider how to provide better safety information services to the local miners in the area under study, and whether to make knowledge of the use of safety equipment a necessary requirement for qualifying to participate inmining activities.
3. Adequate penalties for failure to comply with government regulations may be required to compel the local miners to ensure compliance with safety rules and regulations.
4. Town crier should be used as a means of dissemination information to local miners in the affected areas of lead poisoning.

Appendixes

Photographs of mining sitesat Maru and Anka Local Governmenr Area of Zamfara state, Nigeria

Fig 1: One of the local miners attempting to enter an Excavation hole to dig mineral resources

Fig 2: A group photograph with some local miners and the research team

Fig 3: Extraction of soil for filtration process (Open space)

Fig 4: Local miners at one of the site where sand are being dug

Fig 5: One of the some of the team members together with local miners at one of the sites

Fig 6: Local miners

Fig 12: Sluicing

Figure 7

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