

Accessibility and Use of Agricultural Information by Livestock Farmers in Nigeria: A Review

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Abstract: *This research study is an analysis of literatures that has been published in the area of livestock farming that was conducted over a specific period of time, which comprehensively and thoroughly produces detail and wide-ranging importance documents. This analysis will thoroughly determine the nature and condition of previous and current studies dealing with the events that have influenced the production, and problems of livestock farming in Nigeria. The analysis will cover areas such as: The philosophy of agricultural information, livestock farming, information sources and types, information access, use of agricultural information as well barriers to agricultural information access and used were all reviewed.*

Keywords: Agricultural Information, Livestock farming, Information sources, and Information access and use

1. Introduction

In an era of the knowledge economy, information plays an increasingly important role in every circle of the developmental process. Agricultural information access and use are essential requirements for the growth of livestock products adequate and well-packaged agricultural information improves production. Many efforts have been put in place by the government and other stakeholders to boost livestock production in Nigeria. The Federal government allocates huge amounts of money yearly to the agricultural sector during the budget presentation, efforts are on top gear to establish new universities and fund them, and research institutions are receiving support with the necessary facilities to conduct research and communicate the information to livestock farmers. Similarly, efforts were been put in place by Non-governmental organizations (NGOs) and stakeholders with different initiatives to complement the government in supporting livestock productivity for economic growth. However, all the mechanisms put in place is yet to change the narrative of low productivity (FMARD, 2017). In addition, the International crisis group (2021) reported a national livestock transformation plan design of ten years, and how effectively cattle production can be managed thereby making it more productive and sustainable and at the same time encouraging coexistence between herders and farmers. The core plan initiatives are to establish various categories of ranches such as large, medium, and small in public grazing reserves and improve service around them including securing water to irrigate pasture and grow fodder, with support from the government, private sector investors, and foreign and local donors. Although the plan focuses on cattle herding, the government expects that it will benefit other livestock producers. The plan initially identified seven pilot states to develop ranches in public grazing reserves, namely Adamawa, Benue, Kaduna, Nasarawa, Plateau, Taraba, and Zamfara. The plan includes provisions for monitoring and broad priorities. To guide and evaluate progress, it outlines a "Result Framework" outlining specific targets throughout

the timeline, as well as a set of indicators measuring performance. Adomi et al. (2003) in their study Gender factor in crop farmers' access to agricultural information in rural areas of Delta State, Nigeria reported that only a small amount of agricultural information is accessible to rural farmers, despite the large body of knowledge that exists in research institutions, universities, public offices and libraries. This situation is largely attributed to weak information infrastructures and policies. To respond to this shortcoming, the United Nations Organization 2010 came up with the Millennium Development Goals (MDGs) program which addresses the African problems, particularly agriculture. The MDGs goal number is as follows: Represent human needs and basic rights that every individual around the world should be able to enjoy freedom from extreme poverty and hunger; quality education, productive and decent employment good health and shelter; the right of women to give birth without risk to their lives, and a world where environmental sustainability is a priority and women and men live in equality Millennium Development Goal, (2010). This particular goal is important to Nigeria since poverty is one of the social problems that have been bedeviling the country over the years. More so, its reality has been manifested in many severe incidences, despite the vast human, natural, economic, and development potentials the country is blessed with (Ayoade, et al., 2011)

Philosophy of Agricultural Information

Agricultural information is a term that has gained popularity with the widespread use of its creation the dissemination. This has accounted for its title as 'Information as a tangible resource' where it is believed that performance improvement of farming activities depends on the availability, accessibility, and usability of agricultural information. Stanley, as cited in Odunewu and Omagbemi (2008) postulates that agricultural information is one of the basic needs of farmers after air, water, food, and shelter. This makes agricultural information so tangible that farmers consciously seek it in a variety of sources to make an informed decision in regard to land, labor, capital,

management, and farming activity. Ekoja (2000) defined agricultural information as published and unpublished knowledge on all aspects of agriculture that are interdisciplinary in nature and have universal application. Agricultural productivity can arguably be improved by relevant, reliable, and useful information and knowledge. Hence, the creation of agricultural information (by extension services, research, education programs, and others) is now often managed by agricultural organizations that create information systems to disseminate information to farmers so that can make better decisions in order to take advantage of market opportunities and manage continuous changes in their production systems. An available and well-introduced information will improve the efficiency of rural development, policies, projects, and programs. Tadesse, (2008) defined agricultural information as the various sets of knowledge and messages that are relevant to agricultural production activities of farmers such as crop production and protection, animal production and management, and natural resource production and conservation. This implies that agricultural information caters to the entire life cycle of all aspects of the production of any given agricultural sector.

Oladele (2011) observed that lack of agricultural information is a key factor that has greatly limited agricultural advancement in developing countries. Thus, agricultural information interacts with, and influences, agricultural activities in a variety of ways. This implies without information about a problem or opportunity, the decision-making process does not even start. Without information about the context in which the problem has occurred, one cannot take any decision on it. With the right kind of agricultural information, farmers can take good quality decisions. Li and Baoguo (2011) in their study, findings revealed that the provision of adequate agricultural information is the central element of advancing the agricultural system, as well as the fundamental and essential promoter for agricultural development, helping for the betterment of the rural farmers. Lack of information resources in the rural communities is the main factor hindering increased agricultural production and high income by farmers. Aina (1995), Mooko, and Aina (2007) have reported in their research findings that agricultural information is an essential recipe for successful farming. One, therefore, sees that this set of instructions can be used by Nigerian farmers to increase productivity. Nevertheless, adequate and timely provision of information using the proper mediums and other components of communication such as good roads, proper orientation, and agricultural policies will certainly improve production. Mohammed (2010) posited other factors such as research and development, extension, education, infrastructure, and government programs which undoubtedly increased agricultural production.

Livestock Farming

Livestock is an integral part of agriculture, and it plays a significant role in the nutritional security of people (Phand, S. 2021). Livestock systems have both positive and negative effects on the natural resource base, public health, social equity, and economic growth (World Bank 2009). Currently, livestock is one of the fastest-growing agricultural subsectors in developing countries. Its share of agricultural

GDP is already 33 percent and is quickly increasing. This growth is driven by the rapidly increasing demand for livestock products, this demand is driven by population growth, urbanization, and increasing incomes in developing countries (Delgado 2005). The sector plays an important role in the rural economy of Nigeria, it provides livelihood to more than 93% of the rural population. The importance of livestock in the Nigerian agricultural economy has been well recognized and next to land and irrigation, livestock is the single largest asset in rural Nigeria, a large variety of livestock are available for draught power, milk, meat, egg, wool, etc. and thus ensuring additional income to the livestock farmers. Nearly, 75% of the Nigerian rural households are keeping the livestock out of which the resource-poor farmers own about 80% of the livestock. Therefore, livestock and livelihood have an intimate relationship, particularly in arid and semi-arid areas.

Idris, S. (2016) defines livestock farming as a process of rearing animals for food and human uses. Livestock can be conceived as ruminants such as cattle or dairy cows, chickens, goats, pigs, horses, camels, and sheep. In the same vein, Brown (2011) remarked that animals like donkeys, mules, rabbits, and insects such as bees are being raised as part of livestock farming. In livestock farming systems, the farmer is usually directly responsible for quality control giving him an important role in consumers' health. Livestock Farming can also be described as the intentional rearing of all domesticated animals, especially sheep, goat, cattle, chickens, rabbits, camels, ostrich, ducks, and birds in an agricultural setting for food and fiber or breeding purposes Idris, S. (2016). Livestock may be raised for profit or subsistence. Livestock production has become a source of employment and livelihood in Nigerian agricultural environments, the careful and proper rearing of cattle, sheep, and goats in Northern Nigeria brings a lot of profit to the market, especially during festivities. A large percentage of the rural people in Nigeria satisfy their subsistence needs through livestock production by rearing and marketing livestock. The class of animals under livestock farming includes cattle, sheep, goats, pigs, poultry, camels, etc. Livestock farmers lack adequate and efficient information on how and where to get improved health care, supply, demand, current price, transportation, etc. (Pagot, 2003). In this circumstance, farmers adhere to their simple techniques of farming (Kazeem, 2008). Livestock production in Nigeria has been in the traditional system in which in every ten households seven are rearing one or two types of livestock either for economic purpose or for pleasure. Pagot (2003) reported that livestock enterprises are usually distinguished as being nomadic or transhumance and modern or industrial type. Pagot (2003) further revealed that the classification of the production system, which allows the most coherent generalization, consists of taking account of the final objectives of the product which should be subsistence, rearing solely to build up capital, and rearing for profit.

Information sources and types

Information source is anything that human beings can interact with or observe to acquire knowledge. In other words, it is understood as something that contains and or stores information (Bates, 2012). Likewise, Adio et al. (2016) have indicated that information sources are tools that

can meet the information needs of different categories of users. They are the information carriers Koyenikan (2011) categorized the information sources as formal and informal. According to him, formal information sources include radio stations, local and international print media (such as newspapers, newsletters, and journals), and seminars/workshops, while informal sources are farmers, family friends, and personal assessments and judgments. Another related study carried out by Bates (2012) specifically highlighted the role of Agricultural Research Institutes and Agricultural officers as information sources. Adio et al. (2016) identified radio, television, extension workers, cooperative societies, friends and colleagues, newspapers and magazines, books/leaflets, phones, libraries, and institutes. In addition, observation of people's organizations, speeches, documents, pictures, and artwork can also be described as information sources. However, Emmanuel, (2012) mentioned the following as the sources of information, libraries, the internet, colleagues, personal, departmental collections, workshops, and seminars. Bates, (2012) believes that information sources come in great diversity and various forms such as print and non-print forms. Therefore farmers can obtain information from several sources, comprising extension workers, colleagues, radio, television, farmer-to-farmer visit through their social network involved in agricultural activities, and print materials like farm magazines, newspapers, brochures, and leaflets (Aker, 2010). On contrary, Oladele(1999) stressed that the efficiency of technologies generated and disseminated depends on effective communication which is the key process of information dissemination.

Iidowu (2002) conducted a study on the use of agricultural information sources among agricultural farmers and extension workers in Nigeria. The findings described the researchers' scenario as being information deprived, which implies a situation where researchers have too much information and are unable to pick out the right sources. The policy implication of the findings showed that to improve the performance of agricultural researchers and extension workers, the provision of information sources as well as the facilities to enhance their use is very important in the research institutes and information dissemination systems. In the same vein, information sources may be observations, people's speeches, documents, pictures, organizations, etc. it can also be seen as the degree to which social influence, advertising, published reviews, and exposure to a technology influence the development of an individual's normative beliefs (Rogers, 2003; Brown and Venkatesh, 2005). According to Ajuwon and Odeku (2012), information sources come in great diversity and various forms such as print and non-print forms. Print connotes books, periodicals, bibliographies, maps, indexes and abstracts, photographs, government documents, technical reports, etc. It can also be in electronic form. Non-print materials include audio-visual, multimedia, microfilms, electronic books, journals, images, texts/records from the internet, web documents, etc. These information sources can be found in human archives, libraries, and the internet. Information sources are tools or information carriers that meet the information needs of extension workers. Many studies have been conducted to determine the type of information sources for agricultural extension workers. Alfred and Odefadehan (2007) identified

various information sources of extension workers including organizations, individual associates, local, national, and international seminars, workers, training, print and electronic media, telecommunication, and internet service. Another related study carried out by Farooq, et al (2010) specifically highlighted the role of Agricultural Research Institutes and Agricultural Officers as information sources while Rama and Joan (1996) identified agents in the office, agents in other countries, extension specialists, project supervisors/guides, news agencies, state/federal agencies, school teachers and administrators as prominent information sources to agricultural extension workers. However, Mugwisi, Ocholla, and Mostert (2012), after emphasizing the position of libraries, the internet, colleagues, personal and departmental collections, workshops, and seminars, argued that farmers preferred print sources than face to face interaction.

Opara (2008) investigated the overall sources of agricultural information available to farmers in Imo State (Nigeria), as well as the farmers' preferred sources. The study revealed that 88.1% of the farmers' source of agricultural information was through extension agents. Similarly, Ozowa (2008) in his study carried out on small farmers in Nigeria shows that among all the existing channels of communication, Nigerian farmers ranked extension workers the highest in providing credible information and advice.

Loibl and Batte (2009) remark that "as agriculture systems become more complex, farmers' access to a reliable, timely, and relevant information source is critical and competitiveness. The Information must be relevant and meaningful to farmers in addition to being packaged and delivered in a way preferred by them. Yusuf, Masika, and Ighodaro's (2013) survey reported that most farmers depend on friends, neighbors, and colleagues for farming information; however, the majority preferred extension officers together with on-the-farm demonstrations. Similarly, Benard, Dulle, and Ngalapa (2014) and Rees et al. (2000) studies revealed that the major sources of information for small-scale farmers are family members, markets, personal experience, neighbors, community associations, and agriculture extension officers. This statement connotes the fact that farming activity in this situation is still at a primitive stage, relying on local or nearby information or even copying from what a neighbor does and put into practice. Balit et al (1996) believed that adequate access to knowledge and information is the least expensive input to improve rural agricultural development. The main purpose of animal husbandry information sources is to reach farmers who cannot be contacted personally by extension workers, in the shortest possible time. The Location of the audience group and availability of time are the deciding factors in choosing information sources (Chauhan and Kansal 2014). Traditionally, the potential sources of information for farmers on various aspects of product marketing and finance include media, government extension services, consultants and farm service firms, traders, input dealers, other farmers, and relatives (Mittal and Kumar 2000, NSSO 2005, Sarvanan 2011). The different information sources accessed by livestock farmers in India are given NGOs, cooperative societies, village fairs, input dealers, credit agencies, extension workers, newspapers, television, and radio. These

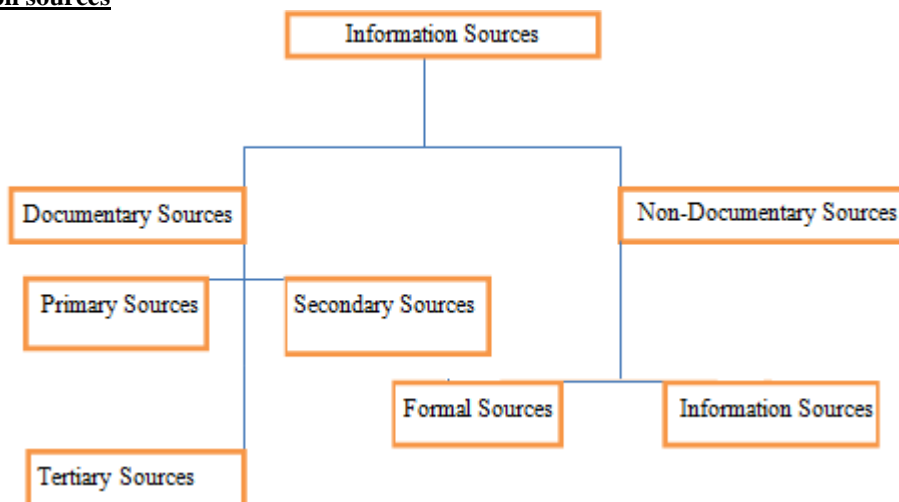
compositions of sources proved to be the reason for successful agriculture in India, access to credit facilities, participation of NGOs, and working under active cooperation lead to successful farming practices. Aina (2007) opined that farmers would be benefitted to a greater extent if information centers were located in rural areas supported with complete information and communication gadgets that will enable electronic accessibility. The traditional print and library-based methods face constraints in delivering agriculture-based information to farmers who are located far away from formal sources of information, e.g. extension stations (Van and Fortier, 2000). Shabnam, S. et al. (2016) in their study on information sources for Indian livestock farmers see the public sector as the best information source for livestock farming, they believed that most extension work is carried out by public sector agencies. This implies that access to information is guaranteed with the fact that no amount of information will be denied to farmers and it is freely accessible. (Anderson and Feder 2004, Ravikumar and Mahesh 2011), centralized extension services have rarely made transmission of information on livestock production a priority in developing countries (Morton and Matthew man 1996). State Departments allocate meager funds varying between 0.3% to 9% of their total budget for various extension activities including publication of literature in local languages, conducting training programs, organizing demonstrations, health camps/fairs, exhibitions, and training (Chander and Rathod 2013). Similarly, Television is an important source of information related to the agriculture sector. Doordarshan, the national broadcaster has a long-running television program “KrishiDarshan” which covers various aspects of

agriculture and animal husbandry. DoordarshanJallandhar has a telecast program called “KhetiKhabranAtteMandian De Bhaa” dedicated to the dissemination of information regarding agriculture and animal husbandry. DD Kisan, a 24-hour television channel was launched in May 2015 dedicated to agriculture and allied sectors. Also, in the western part of Nigeria radio broadcasts on Agriculture such as “Arokobodunde, Sagbedoro, Ketigbo, and Ereagbe Farmers Forum and Agbelere” are aired weekly that cover all procedures of successful farming. The use of modern ICT-based services; especially the internet and mobile have provided an opportunity to reinforce the traditional extension services and information dissemination (Mittal and Mehar 2013). Wakle et al (1998) suggested that farmers prefer to contact easily available personnel in informal settings instead of formal and remotely available contacts. Biradar (2000) revealed that farmers prefer informal and personal sources (friends, neighbors, shopkeepers) over impersonal sources of information. This clearly shows that farmers access such information within their community in a friendly and respectable way. Sharma and Sahoo (2008) reported that the most effective information among the farmers was disseminated through personal contacts. Interpersonal communication channels are the most preferred among rural communities in India (Bhaskaranand Rao 1985). However, with all the reviews, we conclude that the sources of agricultural information can be divided into two broad categories namely:

A) Documentary Sources

B) Non-Documentary Sources

Types of information sources



Information Access

Access to information is a linchpin for growth and development. It can the capacity to facilitate farming participation in an economical means. Access to information promotes transparency and accountability across the different strata of agricultural activity (FAO, 2020). This implies that with timely and efficient access to information that is tailored to a specific location, agricultural production will be improved.

In their study in 2005, Jaeger and Burnett see access as “the presence of a strong system through which information is

placed available to community and others”. Such a system has physical, thoughts, and social components (Jaeger and Burnett). Thus, information access is a combination of intellectual thoughts, physical, and social elements that affect the availability of information to individuals. Buckland (1991) provides an early example of the difficulties in articulating access. He itemizes six processes of access such as identification, availability, price which has a direct bearing on the user, cost to the provider of the information, understanding, and acceptability; but understands most of these primarily in terms of technological capabilities and requirements. For example,

identification, as Buckland describes it, is concerned with how retrieval systems recognize suitable sources by using appropriate web search engines. Kaniki, (1995) in his study perceives Information access as the absence of applicable information tangible to handle situations. People often talk about information access when, in fact, they are referring to using it. Munyua, (2000) attested that, when the rural farmers lack or are denied access to information that would help them make an informed decision towards achieving maximum agricultural success, they are not only groping in the dark but are driven to the urban cities in search of white collar job, as the only option for survival. Blait (1996) pointed out that the least expensive input for improved rural agricultural development is adequate access to knowledge and information in areas of new agricultural technologies, early warning systems (drought, pests, diseases, etc), improved seedlings, fertilizer, credit, market prices, etc. To buttress the statement, the best authority concern and other stakeholders can offer rural farmer access to fertilizer which will enable them to actively utilize and boost their farming products. Farmers do appreciate access to improved seedlings but unlike the fertilizer. According to Nikolas (2005), need is one of the priorities that makes one access information this is to enable him to quench the desire. This turns out to be time given, by adding that it is the information that individuals require to solve their problems effectively. The farmer cannot be an exception. Information needs arise out of a desire to meet one or other of the three basic human needs: physiological needs (need for food, shelter.); psychological needs (need for domination, security), and cognitive needs (need to plan, learn a skill) (Kaniki, 1995, Nikolas, 2005).

Therefore, in this increasingly information-dependent age, the lack of information could certainly have serious, or even, perilous consequences for the individual. Information is needed in all stages of human development. Individual needs information to add to their existing knowledge and take a decision. Human beings are regarded as information seekers regardless of age, religion, tribe, or race. For information to be of optimum use, it must have the following qualities: timeliness, accuracy, relevance, currency, clarity and must be cost-effective (Vidanapathrina, 2012). Possession of all these qualities from any given information will no doubt ascertain any decision taken by a particular individual. As Nikolas, (2005) perceive it, on most occasion, farmers have no idea about their information needs, hardly they differentiate the gap existed between access and need. It could be that they are not aware that there is information out there that could help them a great deal. They also do not know that new information has rendered obsolete what they previously knew. As a result, this leads to a quest for new information which arises, in that is so much needed by the farmers. It is only when they are exposed to the relevant information that the need is recognized, this is called dormant need. The other type of information need is unexpressed needs. This is a situation where users are aware of their information needs, but do nothing about them, either because they cannot or will not disclose their information needs. Many people are unaware of what the information service can do for them so they do not make demands upon it. Of course, people may want information they do not need or which is unsuitable- perhaps, their initial perception of its

value does not match with reality or, maybe, they just use what is close to hand or what they are aware of (Ballantyne, 2009).

Ascribable to the temperance of problems facing livestock farmers in Africa, there are varieties of information access that the livestock farmers can approach. This is especially imperative in an information-dependent sector like livestock farming. However, the only set back by the farmers to access the information is that majority of them in Nigeria are illiterate and therefore were not able to identify some of this information locations, or even lack the technological gadget and know how to access the information most quickly and apply it in there farming activities. Literary, a farmer first needs the important capacity to identify and understand what can be of good use to him. A farmer, therefore, needs to be able to obtain the information in a useable and understandable means i.e it should be communicated in the local language, also the use of audio and video devices is very important as most of the farmers live in rural areas and are very much interested in listening to radio especially when they are aware of programs that are related to agriculture is aired this will, however, assist them to benefit despite their level of illiteracy. The farmer also needs to be able to obtain information from easily accessible locations such as the village head hall, place of worship, and town criers.

Use of Agricultural Information

People use the accessed information to solve different problems or situations. Sometimes they use information as a crucial means to take a decision, or as an agent or tool to perform a certain task. Other times, information is used cognitively e.g., to generate ideas. Yet in other cases, information is used effectively manner when an individual uses it to feel supported or to derive pleasure. Ocholla, (2009) sees agricultural information use as the application of information on agricultural practices for the sustenance of livestock production. This implies that the most vital information needed by livestock farmers in Nigeria is information on veterinary services, price of drugs, markets for their products, and diseases outbreak. Agricultural information utilization simply implies access and use of the available information for the sake of improving production. Stoddart and Smith, (2015) see agricultural information utilization as a process that can aid the capacity of the livestock production system by agreeing on a common approach to prioritizing its use across shared access. Livestock management is essential for the efficient allocation of land, water, labor, and capital in the production of meat, and dairy products. Livestock information utilization is of potential importance not only to the farm business but potentially also to animal welfare and public health, understanding the types of media of livestock information that farmers can utilize is important. Furthermore, understanding how farm and farmer demographic characteristics influence the use of various media may provide insights into the client base for livestock information (Bamaiyi, 2012). Agricultural information utilization offers an opportunity to address problems facing the livestock communities and develop appropriate livestock technological packages (Li, 2014). Also, utilization of information input to the livestock process enables the farmer

to avoid a repeat of what had been done and yielded negative results elsewhere. It saves the farmers time and other scarce resources for sustained animal production. Livestock farmers use the information to reduce uncertainty, so the more information that is used, the greater the reduction of uncertainty.

This statement is no doubt true that optimum use of information in farming activity can remove uncertainty about low productivity.

Barriers to Information Access and Use

An obstacle to information access and use is a serious challenge to effective farming activity. The dwindling in farming activity in Nigeria today could be attributed to poor information reception by farmers in general. Some of these obstacles to accessing agricultural information include, but are not limited to unreliable information and untimely provision of information, most of the time, rural farmers were duped or deceived by people claiming to be an agent of government as extension workers, and they end up collecting some money from them promising to supply them vital information and they end up victims. Lack of knowledge and orientation that will enable farmers to have a better understanding of the emerging technologies to be used in accessing information, Lack of necessary skills, and poor ICT training had limited their access to agricultural information, poor commitment and collaboration, theft of electronic gadget which is very popular and rampant in rural and urban areas, high servicing cost which also denied farmers to access information. The abrupt increase in data subscriptions in Nigeria is a serious concern to a local average farmer considering the economic situation that the majority cannot afford, and poor information infrastructures (libraries, community information centers, and extension services). On the other side, there is low education and training that will enable the farmers to optimally use the information, and the lack of trust and transparency between farmers and the service providers makes it difficult for rural farmers to accept and use the information. Lack of functional livestock farming cooperatives/associations

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