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EFFECT OF MANAGEMENT INFORMATION SYSTEM ON THE PRODUCTIVITY OF LIVESTOCK FARMING IN GHANA: A CASE STUDY OF SELECTED PIG FARMERS IN AKUAPEM

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ABSTRACT

This study investigated the effect of management information system (MIS) on the productivity of livestock farming in Ghana. The survey method was used in a quantitative case study design; a structured questionnaire was used to collect data. Out of a population of 113 smallholder farmers involved in livestock production in the selected areas: namely Akropong, Abiriw and Odawu; a sample of 40 livestock farmers were purposively selected to participate in the study. Findings indicated that livestock farmers needed information on disease control, livestock protection, shelter for livestock and livestock production. The major drawback of the management information system was that it did not meet the special demands of each farmer. In most cases, the management information system does not provide exact information to farmers despite the fact that the concept of decision support system was created in response to such need. The major challenges faced by farmers in the implementation of MIS were inaccuracy and lack of IT skills. The main factors related to access and use of management information system were assistance from experts, organised farmers' groups, affordable inputs, and awareness of the benefits of information use.These imply that access and use of information facilitate the improvement of livestock farming. It is therefore important to ensure that adequate and appropriate information flows to the rural areas, and that farmers are able to effectively utilize it.

1.0 Introduction

The last few decades have witnessed the spread of various types of Management Information System (MIS) and its influence in both public and private sectors, as well as at the international level. The growing body of literature indicates that the impact of MIS is positively related to the organizational business performance (Azeez & Yaakub, 2019). Management information systems are systems that tend to have clearly defined inputs and outputs that enable and provide necessary facilities for accurately and efficiently managing an organizational process. It could be sales, order or record keeping of staff. Information system is a collection of people, procedures, software, hardware and data (Osei & Hashim, 2020). Connectivity allows computers to connect and share information, thereby greatly expanding the capability and usefulness of an information system. Management information systems are meant to reduce the stress in managing businesses or organizational procedures.

Management Information System (MIS) is one of the major types of computer-based information systems (Osei & Hashim, 2020). It uses the database of an organization in producing well-structured forms of reports. Management Information System (MIS) is designed to assist livestock farmers to perform various tasks ranging from operational planning, implementation, documentation, and applying for financial subsidies. Different stakeholders such as farmers, governmental organizations, service providers, and machinery manufacturers transfer information amongst each other in MIS.

For a fully operational farm, there is a continuous need to maintain a steady information flow to and from the farm environment. Information flow provides the farmer with external knowledge and decision support in order to perform efficient field operations, and it serves as a means of transmitting data about farm and field operations.

As an additional benefit, various stakeholders such as government and legislative bodies, processing industries and private manufacturing industries, tap into this information system of data flow to collect and transmit information, or provide machinery service support for farmers. Many new ideas in information collection and management have been tried in recent years and valuable lessons can be learnt from reviewing the experience of others (Bans-Akutey, 2019). Not surprisingly, there have been some notable successes and some disappointments. However, many valuable ideas and experiences have not been described in the scientific literature, in part because such systems are a means of achieving results and the findings, rather than the methods of obtaining them, have been reported. In addition, development at present is so rapid and diverse that many people working in the field tend to consider as premature reporting on techniques which they see as still under development.

Animal agriculture has a specialized significance as it can play an important role in improving the socio-economic status of a sizable section of the weaker population. In most cases livestock is the source of cash income for the subsistence farmers. If agricultural technologies developed for farmers in developing countries are not transferred in correct (appropriate) manner and adopted accordingly, all the efforts by the researchers who developed new technologies would have been in vain.

Although researchers and information intermediaries have made efforts to reach out to livestock farmers, there are constraints to accessing information in selected areas of Africa in which Ghana is also not an exception (Matovelo, et al, 2006). Some of these constraints include low literacy levels; lack of access to information; lack of access to Information and communication Technologies (ICTs) lack of skills to access information from ICTs; poor linkage among farming actors; high level of poverty; and lack of appropriate and effective mechanisms to disseminate information to end-users (Kiplang & Ocholla, 2005). Pig farmers require adequate and comprehensive information in order to improve their knowledge about livestock farming activities. Thus, access to information is a key factor contributing to increased livestock productivity.

A few studies (Chisenga, et al, 2007; Bans-Akutey, 2019; Bans-Akutey, 2020: Bans-Akutey & Sowah, 2020) have attempted to evaluate access and use of management information. It is evident, however, that very little is known about access and use of management information by livestock farmers. In order to make management information system accessible to all farmers, it is important to understand farmers' information needs and information seeking behaviours (Chisenga, et al, 2007). In this regard, it is imperative to investigate the information needs and information seeking behaviour of these farmers. Knowledge about these needs and behaviours of livestock farmers could play a vital role in understanding their information needs and meeting them effectively. The findings of this study could be useful in adjusting information dissemination strategies in order to take the needs of livestock farmers into account.

This study aims to evaluate the effect of management information system on the productivity of livestock farming in Ghana. Therefore, the objectives of the study are stated below;

1. To assess the information needs of livestock farmers in Akuapem, Ghana.
2. To analyze the challenges faced by livestock farmers in the implementation of Management Information System in Akuapem, Ghana.
3. To determine the factors related to access and use of management information in Akuapem, Ghana.

2.0 Literature Review

Ghana, officially the Republic of Ghana, is a country in West Africa. It spans along the Gulf of Guinea and the Atlantic Ocean, sharing borders with the Ivory Coast in the west, Burkina Faso in the north, Togo in the east, the Gulf of Guinea and the Atlantic Ocean in the south. Ghana covers an area of 238,535 km2 (92,099 sq mi), with a population of 31 million. It is the second-most populous country in West Africa, after Nigeria; and Accra is its capital and largest city.

Ghana's diverse geography and ecology range from coastal savannahs to tropical rain forests. It is a unitary constitutional democracy led by a president who is both head of state and head of the government. Ghana's growing economic prosperity and democratic political system have increased its regional influence in West Africa. It is a member of the Non-Aligned Movement, the African Union, the Economic Community of West African States (ECOWAS), Group of 24 (G24) and the Commonwealth of Nations.

Ghana is an average natural resource enriched country possessing industrial minerals, hydrocarbons and precious metals. It is an emerging designated digital economy with mixed economy hybridization and an emerging market with 8.7% GDP growth in 2012 (Srivastava & Pawlowska, 2020). It has an economic plan target known as the "Ghana Vision 2020". This plan envisions Ghana as the first African country to become a developed country between 2020 and 2029 and a newly industrialized country between 2030 and 2039. This excludes fellow Group of 24-member and Sub-Saharan African country, South Africa, which is a newly industrialised country. Ghana's economy also has ties to the Chinese yuan renminbi along with Ghana's vast gold reserves. In 2013, the Bank of Ghana began circulating the renminbi throughout Ghanaian state-owned banks and to the Ghana public as hard currency along with the national Ghana cedi for second national trade currency. Between 2012 and 2013, 37.9 percent of rural dwellers were experiencing poverty whereas only 10.6 percent of urban dwellers were. Urban areas hold greater opportunities for employments, particularly in informal trade, while nearly all (94 percent) of rural poor households participate in the agricultural sector (Srivastava & Pawlowska, 2020).

As human population growth increases worldwide, there is need for continuous food supply to ensure food security (FAO, 2006). For the past three consecutive years, there has been a rise in hunger worldwide. It has been reported that about 11% of the world's

population is undernourished, among which 23.2% are in subsaharan Africa and 15.1% are within western Africa (FAO, 2018). Livestock serve as a key source of protein and nutritional well-being (Komatsi & Kitanishi, 2015) and local pig production becomes an attractive option on account of the ease of management, prolificacy of the species and the many small-scale farmers keeping the animals (Osei-Amponsah et al., 2017). Pig production has a high potential to increase productivity due to its fast growth rate, shorter generational interval, good feed conversion efficiency, and high litter sizes compared to cattle (Mbuthia et al., 2015). There is however the need for more information on pig production practices of local farmers in order to make appropriate recommendations for improvement to increase productivity.

Characterization of pig production systems provides useful information for their improvement and conservation. There is paucity of information on the production practices of local pig farmers which can be useful in the establishment of breeding programmes to enhance their production potentials (Ayizanga et al., 2018).

Information is an important factor that interacts with other production factors. Productivity of these other factors, such as land, labor, capital and managerial ability, can arguably be improved by relevant, reliable and useful information. Information supplied by extension, research, education and agricultural organizations helps farmers make better decisions. Therefore, there is a need to understand the functioning of a particular information system in order to manage and improve it (Demiryurek et al., 2008).

According to the findings of Maningas et al. (2000), information within the hands of the farmers means empowerment through control over their resources and decision-making processes. They noted that being an effective and efficient delivery system of essential information and technology services facilitates the clients' critical role in decision-making towards improved production, processing, trading, and marketing. Food and Agriculture Organization points out, information is very important for rural development because improving the income of farming community will depend crucially upon raising livestock productivity. For achieving this there is a need to focus on human resources for increased knowledge and information sharing about livestock production, as well as on appropriate communication methodologies, channels and tools.

Various models of the problem-solving processes in information seeking exist. This study adopted the Information Search Process (ISP) model to provide theoretical guidance for the research. The other one is the Delone and Mclean Model of Information Systems.

The Information Search Process (ISP) Model

The ISP model was developed from the common patterns that emerged within the context of the constructivist theory of learning. The theoretical foundation for the ISP model draws from psychology, using the Personal Construct Theory (PCT), as well as from information science. An information search is viewed as a "process of construction in which people build their view of the world by assimilating and accommodating new information" (Kuhlthau, 1988:1). The PCT, on the other hand, describes a series of feelings that are associated with the phases of construction.

The ISP model presents a view of information seeking from the user's perspective in six stages: task initiation, selection, exploration, focus formulation, collection and presentation. The six-stage model of the ISP incorporates three realms of experience: affective (feelings), cognitive (thoughts) and physical (actions), which are common to each stage (Kuhlthau, 1988).

The first stage is initiation, where the task is to recognize a need for information, whereby the information seeker becomes aware of a gap in knowledge or a lack of understanding. Feelings of uncertainty and apprehension are common at this stage. Thoughts centre on contemplating the problem, comprehending the task, and relating the problem to prior experience and personal knowledge. Actions involve discussing possible avenues of approach or topics to pursue. The second stage is selection, where the task is to identify and select the general topic to be investigated and the approach to be pursued. Feelings of uncertainty often give way to optimism after the selection has been made and there is a readiness to begin the information search.

According to Kuhlthau (1991), the information seeking process is initiated by uncertainty resulting from a lack of understanding, a gap in meaning or a limited construction to solve a certain problem. This will change over time, concurrently with the seeker getting information and constructing meaning to solve the problem. During the initial stages of the information seeking process, the information seeker is usually feeling confused, frustrated and in doubt. However, in the final stages, he or she is usually satisfied, confident and relieved (Kuhlthau, 1991:366). The fundamental proposition is that the feelings of uncertainty associated with the need to seek information give rise to feelings of doubt, confusion and frustration. As the information seeking process unfolds and is increasingly successful, those feelings change - as relevant material is collected, confidence increases and is associated with feelings of relief, satisfaction and a sense of direction (Wilson, 1999).

For instance, when a pig farmer initially faces a problem, he or she may realize the need for information in order to solve the problem. This information need will compel him/her to seek information related to the problem. During information seeking, the livestock farmers will be applying the stages in Kuhlthau's Information Search Process model. In operationalizing the ISP model, the six stages of the ISP, as applied by livestock farmers, can be as follows: Task initiation: This is when a livestock farmer first recognizes that information will be needed to solve the problem. Selection: During this stage, the livestock farmer identifies and selects a topic which is related to the problem to be investigated and the approach to be pursued. Exploration: This stage involves exploring information to establish a focus. In this stage, livestock farmers start to gather information related to the problem. Formulation: A clear focus needs to be formed at this stage, and pig farmers form a focus for the required information. Feelings of uncertainty diminish and confidence increases. Collection: This is when interaction between the livestock farmer and the information sources takes place. At this point, the task is to gather information pertaining to the focused topic. Presentation: This is the conclusion of the information seeking process and the starting phase of using the information. Livestock farmers would have completed the information seeking process, and have begun to use the information. At this point, the farmer may feel satisfied if he or she obtained relevant informa-

tion, or disappointed if he or she did not get relevant information to solve the problem.

DeLone and McLean's Model of Information Systems Success

This study adopted DeLone and McLean's Model (DMM) of Information Systems Success to represent the livestock information dissemination success construct. This model was chosen due to its strength in validity and reliability through continuous validation in many studies. DMM consists of six interrelated categories of success measurements. Each category defines a set of success measures related to a broad information systems concept. The model has three quality dimensions: information quality, systems quality, and service quality. These quality dimensions further impact user satisfaction, intention to use and the usage of the system. These usage-related factors affect each other and have an impact on the net benefits. The realized and perceived net benefits then again impact the usage and user satisfaction of the system. The model therefore shows how the quality of a system has an impact on the usage of the system and the perceived benefits, and that the usage itself affects further usage through user satisfaction.

According to DeLone and McLean, System quality refers to those characteristics that are needed or desired in an information system. Examples of system quality include accessibility, ease of use, system flexibility, system reliability, ease of learning, intuitiveness, sophistication, and response times. Information quality refers to the quality of the information that the system produces, which includes accuracy, relevancy, precision, reliability, completeness, usefulness, currency and preferred format. Service quality refers to the overall support that the users of the system receive from the service provider (i.e. responsiveness and knowledge). System use is defined as the quantity and manner of utilization of the system. In terms of operationalization, system use is measured as the amount, frequency, nature, extent, and purpose of the use. User satisfaction captures how the user feels about the whole experience with the system, starting with the system itself, then moving to the output as an outcome of the system, and finally including the support services that are provided by the system. This is one of the most important dependent variables used in measuring the success of the information system. Net benefits cover how much the information system adds to the success of the individual, group, organization, industry, or even nation (DeLone & McLean, 1992; 2003; Petter, DeLone & McLean, 2008).

In operationalizing DeLone and McLean's model of Information Systems Success, the six dimensions of the model are defined as follows: System quality refers to the desired characteristics of the broad system of information dissemination: usability, availability, reliability, adaptability, and response time. Information quality refers to the content offered, which should be complete, relevant, easy to understand, and current. Service quality is the support that the information provider offers to the farmers. Usage refers to any type of interaction that farmers have with the information providers. User satisfaction measures the farmers' opinions on the information dissemination system. Net benefits are the impacts of the information dissemination system on livestock farmers.

Review of related studies

Msoffe (2015) investigated the access and use of poultry management information in three rural districts of Tanzania, namely Iringa Rural, Morogoro Rural and Mvomero. The survey method, supplemented by methodological triangulation, was used to collect both quantitative and qualitative data. A semi-structured questionnaire was used to collect data from 360 poultry farmers in the selected rural communities. Sixteen focus group discussions were conducted, in which 160 farmers participated. Twenty-two information providers were interviewed. The SPSS software was used to analyze quantitative data, while qualitative data was analyzed using content analysis. The findings indicated that poultry farmers needed information on poultry disease control, poultry protection, shelter for poultry and poultry production. There were very low identification and prioritization of farmers' information needs by the information providers.

Farmers accessed information that had a direct impact and was deemed relevant to their farming activities. It was revealed that farmers accessed information mainly from interpersonal sources. Likewise, farmers preferred interpersonal and informal sources to formal sources of information. The extension officers were considered to be the most effective information source, followed by family, friends, and neighbors'. Various factors, such as lack of awareness, unavailability of extension officers and poor infrastructure, influenced access and use of poultry management information.

Osei & Hashim (2020) critically examines the need for developing an empirical qualitative model for evaluating the impact of Management Information Systems on Organizations Business Performance, in the context of Small and Medium Manufacturing and services related Enterprise of Ghana. The key emphasis is on the integration of the impact of management information systems on business performance using indicator variables. This paper shed lights on the worthiness of the research problems, its centric role and sizeable effects within the context of the Ghanaian economy. The researchers used 19 semi-structured interview qualitative data, using grounded theory, adopting quota sampling. The proposed empirical model is simple, practical, usable and customizable to other business industries.

Abebe (2012) conducted a study that pertains to livestock management practices and their implications on Livestock Water Productivity (LWP) in the rain-fed crop-livestock systems in the Blue Nile Basin (BNB). Seven farming systems (RicePulse and Teff-Millet from Fogera), (Barley-Potato, Teff-Wheat and Sorghum farming systems from Jeldu) and (Teff-Millet and Sorghum farming systems from Diga districts) were selected and a total of 220 sample Household (HH) heads were involved. Cattle were the major livestock species accounting for 83% of the total Tropical Livestock Unit. The preference of livestock species was in the order of Oxen, cows, sheep, goats and equines. Invariably across the study areas oxen were reared for the purpose of traction, income source and manure.

The main purpose of keeping cows, sheep/ goats and equine were replacement, income sources and transportation, respectively. The main objective of integrating livestock into crop is mainly traction services. Farmers' production objective is not market oriented & they are more focused on assisting crop production. Farmers in most farming systems keep cattle in the traditional Kraal system

(enclosure without roofing). This affects animals' physiology in extreme weather conditions thereby lowering LWP. Relatively better (68-83%) housing system (housing with roofing) was exercised in Barley-Potato and Teff-Wheat systems of Jeldu. Most HHs (57-100%) depended on river water sources for livestock drinking. Distance and quality of water were among the major problems raised by farmers. Most (97.3%) sample farmers practice natural mating for their livestock. They also select breeding animals based on their memory instead of performance recording.

Much emphasis was put on physical appearance and color, respectively. Culling performed by farmers was very incomplete for it was not accompanied with performance recording. Breeding females were maintained in the herd for older age until reproductive performance nearly ceased. Lower milk yield and shorter lactation lengths, higher age at mating & calving, longer parturition intervals for female animals and higher age at first effective mating for breeding purposes by the bulls, jack and stallion were observed. Variability in performance within species observed between and among farming systems in were major indicators of potential to improve productivity & thereby LWP. Major livestock production constraints in the study farming systems were feed shortage, disease occurrence and shortage of initial capital. Higher mortality and low off-take rates for different livestock species were observed. Most important reasons for mortality rates were: disease, bloat and feed shortage.

The mere management intervention in the time of harvesting and feeding of the local clovers and sorghum tillers could reduce mortality of cattle up to 40% at Jeldu. Average distance to get veterinary services was 9.6 km. Only 21 and 9% HHs get access to improved seeds and credit for livestock improvement, respectively. Mortality and morbidity affects LWP in two major ways: it reduces the efficiencies of the services and productivity of livestock. Secondly when animal dies water invested to feed the animal will be lost. This is important in view of the increasingly scarce agricultural water. Values of LWP across the study systems were lower and the differences among systems were not as such apparent. Lower LWP values were registered for relatively poor HHs (0.08 USD m-3) at Sorghum Diga and Barley-Potato farming systems of Jeldu districts. Highest (0.24 USD m -3) LWP value at HH level was registered for better-off farm clusters.

More interesting is a huge gap between the minimum (0.001) and maximum values (0.627 USDm-3) of LWP. In view of this it can be concluded that there is huge potential to improve LWP in mixed crop livestock systems. Although understanding the determinants of these variability are important future research policy options that increase farmers access to key livelihood resources is important. Future crop livestock integration must consider not only a short term economic return but long term environmental sustainability. Improving the production potential of local breeds through the different livestock management practices and reducing feed scarcity through food-feed integration adjoined with improved livestock and feed management, better veterinary access and improved extension service could be possible suggestions to lift up the current low livestock productivity and LWP.

Vidanapthirana (2019) presents the background introduction, theories, literature review and analysis of information systems in agriculture. The usefulness of information for agriculture, sources of agricultural information, types of information needs for agricultural development, problems of dissemination of agricultural information are discussed. The study is mainly to identify agricultural information system components, their availability, the understanding of how successfully they work, problems associated with them and how to improve their performances. The review of analysis methods and process of agricultural information systems are also explained.

Nyamekye et al. (2019) discusses how rice farmers in the Kumbungu District in Northern Ghana interact with information systems. Of interest here is the degree to which knowledge derived from such interaction is actionable. The paper addresses the overall question: what information systems are currently providing agricultural information to rice farmers and to what extent does this result in actionable knowledge creation? Findings revealed that Farmer-to-Farmer systems contribute most to actionable knowledge creation. The conclusion therefore is that systems integration and local actor participation are essential for actionable knowledge creation in information systems.

3.0 Results

Table 1 Information needs of livestock farmers in Akuapem, Ghana.

Respondent	Frequency	Percentage
Need for Information	34	85%
No need for information	6	15%
Total	40	100

Table 2 Types of Information needed

Respondents	Frequency	Percentage%
Disease management	21	52.5%
Production	8	20%
Breeds and breeding	6	15%
Nutrition	5	12.5%
Total	40	100

Table 3 Attempts to solve the problems or challenges

Respondents	Frequency	Percentage
Attempted to solve problems	37	92.5%
No attempt to solve problems	3	7.5%
Total	40	100

Table 4 Information sources used

Sources	Frequency	Percentage %
Interpersonal relationship	21	52.5%
Internet	11	27.5%
Researchers	3	7.5%
Media	5	12.5%
Total	40	100

Table 5 Reason for choosing to access information from a particular source

Reasons	Frequency	Percentage %
Convenience	24	60%
Availability	8	20%
Reliability	2	5%
Other reasons	6	15%
Total	40	100

Table 6 Challenges faced in the implementation of MIS

Challenges	Frequency	Percentage
Overhead expenses	4	10%
Lack of accuracy	8	20%
Lack of IT skills	28	70%
Total	40	100

Table 7 Benefits of implementing MIS

Benefits	Frequency	Percentage
Data management	10	25%
Strategic planning	7	17.5%
Increases efficiency	14	35%
Problem identification	9	22.5%
Total	40	100

Table 8 Factors that hinder access to management information

Factors	Frequency	Percentage
Unavailability of information	4	10%
Lack of funds	13	32.5%
Lack of electrical power	14	35%
Poor infrastructure	9	22.5%
Total	40	100

Table 9 Factors that promote access to management information

Factors	Frequency	Percentage
Organized farmer groups	17	42.5%
Reliable information	14	35%
Availability of assistance	5	12.5%
Easy information format	4	10%
Total	20	100

4.0 Discussions

This section discusses the findings in relation to the first objective of the study, which sought to assess the information needs of livestock farmers. The findings indicated that farmers were in need of information which is in line with the model of the Information Search Process (ISP) (Kuhlthau, 1991; 1993). The ISP presents a view of information seeking from the user's perspective in six stages, namely: task initiation, selection, exploration, focus formulation, collection and presentation. The first stage of the ISP model is initiation, where the task is to recognize a need for information. In this case, the livestock farmer first recognizes that information is needed to solve the problem or answer the question. A farmer becomes aware of a problematic situation or information gap that requires information either to solve a certain problem or fill the gap.

An information need arises when an individual senses a problematic situation or an information gap. The study findings show that there were significant information needs among the livestock farmers. The majority of the respondents (52.5%) indicated that they had information needs related to disease management. Other information needs were, production (20%), breeds and breeding (6%), feeding and nutrition (5%) The study findings indicate that there were slight differences in information needs across the three surveyed districts. These findings indicate that the information needs of farmers in rural areas are not uniform. The farmers' needs are diverse, depending on farming activities, level of development, distance from urban areas, and agro-ecological conditions. The findings suggest the need to identify farmers' information needs before embarking on information dissemination to the rural areas.

According to the study, challenges faced by respondents in the implementation of MIS are overhead expenses, inaccuracy and lack of IT skills. (70%) respondents admitted to lack of skills, (20%) had the challenge of inaccuracy and the remaining (10%) attributed it to the challenge of overhead expenses. 25% of farmers believe that the implementation of MIS helps to manage data while 17.5% believe that it gives room for strategic planning. 35% believes that it increases efficiency while the remaining 22.5% believe it helps identify problems.

Due to the benefits of MIS, reliable data collection, rapid data processing and converting them to information, farmers use the management information systems in planning, organizing, leadership and motivation, reporting and control To achieve this, a mediator as the manager of management information system is necessary to optimise the services better for the farmers. The management information system helps by two major ways in problem solving: An information source is provided and helps with the identification of the problem; which is then communicated to the farmers. The major drawback of the management information system is that it cannot meet the special demands of each farmer. Mostly, the management information system doesn't provide exact information.

It was further exposed that unavailability of information (10%), lack of electrical power (35%), lack of funds to buy printed information materials (32.5%) and poor infrastructure (22.5%) were factors that hindered them from accessing management information. When asked about the factors that encouraged them to use management information, farmers indicated that organised farmers' groups (42.5%) and reliable information, (35%) were the main factors. Other factors were availability of assistance (12.5%) from experts such as extension officers and an information format that is easy to understand (10%). This implies that the information source needs to be continuously available, convenient to access and trustworthy, in order for farmers to consider it to be effective.

5.0 Conclusion

This study investigated the effect of management information system in productivity of livestock farming in three districts of Akuapem, Ghana, namely, Akropong, Abiriw, and Odawu. These findings indicate that the information needs of farmers in rural areas are not uniform. The farmers' needs are diverse, depending on farming activities, level of development, distance from urban areas, and agro-ecological conditions. The findings suggest the need to identify farmers' information needs before embarking on information dissemination to the rural areas. The benefit of management information system with this aim is to state the problem possibility for the farmers. The major drawback of the management information system is that it cannot meet the special demands of each person. Mostly, the management information system does not provide exact information and the concept of decision support system was created in response to such need. The findings indicate that the information source needs to be continuously available, convenient to access and trustworthy, in order for farmers to consider it to be effective. In conclusion, access and use of information facilitate the improvement of livestock farming. It is therefore important to ensure that adequate and appropriate information flows to the rural areas, and that farmers are able to utilize it.

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