

# Enhancing Efficiency of Agricultural Financing through a Proposed Cluster Communication Model. A Case Study of Kano State Farmers

Ummi Ibrahim Atah & Shafaatu Bello Habib

*Department of Economics, Saadatu Rimi College of Education, Kumbotso Kano State, Nigeria*

**Abstract:** The study aims at enhancing efficiency of financing farmers through identifying factors responsible for poor access of information among farmers in Kano state. In addition to proposed cluster communication model for improving access to information through SMS alternatives, which enhances access to finance, a web form of information hub is generated with the advantage of building extended business opportunities. The study adopts qualitative method by critically reviewing the existing literatures through content analysis. The study revealed array of factors responsible for wide communication gap such as farmer's incapability, Illiteracy, inadequate infrastructural facilities and few extension agents. After critical analysis, the study identified corruption as the major factor. Moreover, the study uncovers that little input on information sharing and networking through text message on Kenya's and China's farmers have shown astronomical improvement of farmer's life. Hence the study proposes cluster communication as the key to success of bridging communication gap between stakeholders as well as stimulant for enhancing financing of farmers. It is a root-to-top communication for effective networking of information management to circumvent the corruption-ridden means of communication. Using simple but modern means of communication, three stages were proposed which includes; the enlightenment, implementation and feedback mechanism. The novelty of this study lies in proposing a unique structure of cluster communication model which embark on from top to bottom communication for enhancing financing to farmers through adequate flow of information. The research is limited to content analysis and proposing only cluster communication model without practical survey to assess the stakeholder perception regarding the model. Study findings can be useful to policymakers in finding underlying factors that brings about communication gap between farmers and financiers as well as the right measures to take in speeding up adequate flow of information between agricultural stakeholders. The study outcome may improve the level of awareness of farmers through adequate flow of information which ultimately enhance their access to financing thus improve their productivity and quality of life.

**Keywords:** Information; efficiency of agricultural financing; cluster communication model.

## I. INTRODUCTION

Effective management of information is a systematic design of generation, control and transmission of information in a close or open inter-related system for the attainment of the system's goals (Karim, 2011; Alter, 2008).

Information is a powerful tool that has been utilized to win lost battles for centuries. Information is essential for the development of any economy. Its importance is so vital that innovation will not be possible without it (Fawole and Oladije, 2012). It is a significant resource than material and energy (Chen, Liu & Yang, 2011). A person that has more access to information can dominate social competition (Chen, Liu & Yang, 2011). With this notion, it is safe to assert that information poverty is an obstacle and major challenge to the development of a nation. Hence, the need to address this problem is necessary (Fawole & Oladije, 2012).

In Nigeria, agriculture is one of the major sources of employment about 70% and GDP about 24.4% (Agwu, 2017 & Ihegboro, 2014). The agricultural sector is normally dominated by small holder farmers about 80% of the population who are mostly engaged in subsistence farming (Agu, 2017). Farmers are key stakeholders of any country's development because they are responsible for food production to meet domestic demand and serve as a source of export. In Nigeria, 99% of food is produced by small holder farmers (Sabo et al, 2017). In spite of their crucial importance to the economy, the role of small holder farmers in Nigeria is seriously affected due to information asymmetry and lack of adequate information (Sabo et al, 2017).

Researchers in Nigeria have shown that the relevance of information and the need for integrating a proper channel of communication between farmers, financial institutions and Government financing institutions is not given adequate recognition (Fawole and Oladije, 2012). It has been recognized that the small holder farmers have limited access to modern means of getting information that can uplift their life (Obidike, 2011). Consequently, farmers are undermined and disempowered because they are always at the bottom of the pyramid in terms of development consideration, which drastically affects their productivity (FAO, 2015). Appropriate communication for update on agricultural information is not seen as a major priority by the Government (Agwu et al., 2008). Therefore, certain amenities that are basic for getting appropriate agricultural information are lacking in most remote areas (Agwu et al., 2008). This is perhaps the reason why accessing appropriate information that can empower farmer is still a challenge (Obidike, 2011).

In this digital era, simple communication means such as text messaging can be employed to deliver prompt and reliable information to farmers in the areas of better-quality seedlings, improved methods of cultivation and fertilizer application, pest and weed control/extermination (Obidike, 2011). Generally, there are certain basic information needs that farmers are concerned with. This is normally information pertaining to production, processing, and market, technical information tied to production systems among others (Brinkman and Wesseler, 2003). Most farmers in Nigeria cannot meet their information needs as desired because there is no effective communication among farmers in the rural area (Brinkman and Wesseler, 2003).

Lack of effective agricultural information reaches a climax where presently majority of rural farmers are oblivious of basic information regarding general price level, level of demand and supply for their commodities, the right place and time to sell their commodities and their prospective buyers (Brinkman and Wesseler, 2003). To crown it all, most rural farmers are not abreast with new government agricultural financing programmes and how to secure financing from financial institution (Ekoja, 2003). Generally, there is inadequate flow of information between lenders(financiers) and borrowers(farmers) (Turner,2017; Ameh &Andrew, 2017). The financial institutions are not giving adequate information to farmers on the right way to invest their funds. The problem of information asymmetry led to frequent default of repayment and in appropriate used of the loan amount which exposes the financial institutions to various risk such as credit risk and adverse selection (Kshetri, 2016; Kidwell, Blackwell, Sias, & Whidbee, 2016).

Other findings of Ameh &Andrew (2017); Ikani &Ayegeba, (2013); Agbulu, Ochani (n.d) view lack of information as the constraint of accessing farmers financing in Nigeria. This is because farmers are normally located in the rural areas far away from where the financial institutions are located in the city. Moreover, other means of communications such as newspapers, magazine and agricultural publication on loan acquisition is short supply in the rural area. Infrequent agricultural extension visit on the farmers has also contributed to shortage of information on loan acquisition by the farmers. This is serious issue because awareness about agricultural loan facilities places the farmers in a better position to seek for loan facilities. The resultant effect of poor information translates to low profit generation for farmers, lower standard of living, poor expansion potentials and erratic market structure (Obidike, 2011). This brings about rapid decline of farming activities amongst the rural communities and hence, the observed influx of people into urban cities for greener posture (Obidike, 2011).

Consequently, ensuring appropriate channel that can provides quality flow of information from financial institutions to farmers is very essential. This motivate this study to look deep into the underlying factors that hinders access to adequate information to farmers and proposed a cluster communication

model that can be used to provide quality flow of information between all agricultural stakeholders in Kano state.

Therefore, the study seeks to achieve the following objectives:

1. To investigate factors responsible for poor access of information among farmers in Kano state.
2. To propose cluster communication model for improving access to information between policy makers, financial institutions, agricultural extension workers and farmers so as to empower farmers of Kano State to generate more profit.

## II. OVER VIEW OF FARMERS SOURCES OF ACCESSING INFORMATION IN KANO STATE

Kano state is an ancient city located in the northern part of Nigeria with a population accounted to 9,383,682 (Barau, 2006). However, over 90 % of the population are Muslims. Most of the farmers are residing in rural areas and are considered as subsistence farmers possessing not more than five acres (Adamu, 2016). The system of agricultural practice is characterised by traditional system of farming that date back to the fore ancestors with crude implements (Adamu, 2016). Such primitive practice of farming seriously affects the productivity of the farmers as their potential is not fully realised. This is due to underutilisation of full capacity, consequently, resulting to low yield (Adamu, 2016).

The low level of awareness and inadequate information in Kano state is part of the reason why traditional system of farming is endemic among the poor farmers (Adenkule, 2004). This ignorance brings about situation where farmers cannot access information regarding financial service available in both the Government and financial institutions financing (Aliyu, Yusof, & Naiimi. 2017; Bichi, 2017). This is because large number of farmers in Kano State are poor in desperate need of financing (Ogunbode &Omar, 2015; Mohammed, 2016; Sunusi, 2010). The catastrophic nemesis of poor information and communication gap is what aggravates the level of pest and diseases in farming. Other factors include use of poor quality fertiliser, pesticides and herbicides which retard the development of the agricultural sector in the State (Danlami, Islam, Applanaidu, & Tsani, 2016; Adenkule, 2004). Emphasized by Blait (1996) as cited by Obidike (2012), rural agricultural development can only be improved when there is adequate access to information and knowledge in the form of marketing, pricing, credit, technological innovation, use of higher variety seeds, pesticides, herbicides among others.

In Kano State, it is observed that despite the emergence of simple technological application such as text messages through phones, the available sources of information are through agricultural extension workers (leaflet, extension guide, posters), radio and television, agricultural shows, agent advisory visit e.t.c (Adenkule, 2004). But farmers prefer using radio rather than other facilities. In line with this background.

It then becomes imperative to examine the factors responsible for poor access of information among farmers in Kano State.

### III. FACTORS RESPONSIBLE FOR POOR ACCESS OF INFORMATION AMONG FARMERS IN KANO STATE

1. Financial incapacitation of the farmers: It may be argued that the fact that majority of the farmers are subsistence small holder farmers and generally poor due to low income generation with limited sources of accesses to financing justifies their limited access to information. However, as true as it may sound, this study discovered that the reverse is the case because inadequate sources of information is a major instigating factor for poverty. Hence, in consideration of the proliferation of new digital arena of information, acquiring facilities such as computers, mobile phones, TV and other electronic products, one may assume that communication gadgets are accessible. However, the cost of these facilities, more especially computer is relatively high, and majority of the farmers cannot afford to buy (FAO, 2015).
2. Inadequate infrastructural facilities; Majority of the farmers in Kano State are rural based who lack the basic amenities in the form of good roads, electricity, telecommunications and internet connectivity. Poor communication system, poor relevant electronic gadgets and epileptic power supply block the chances of adequate information dissemination to farmers in Kano State (Adekunle, 2004).
3. Poor network system: In Kano state the rural areas are generally situated at a distant location away from the urban centres where the masts for propagating the network are concentrated. Hence, the network in most rural areas is constantly facing service failure or disjointed network propagation. The poor network is not limited to telecommunication services but even Radio and television signal reception is weak and poor in some villages (Adegoke & Babalola, 2011).
4. Insufficient extension workers: The number of extension workers is insufficient considering the number of farmers in Kano State where 70% of the population depend on agriculture. The extension workers also find it difficult to access remote areas and disseminate agricultural information. More so, extension officers have not fully embraced the use of modern gadgets in advancing the access to agricultural information (FAO, 2015).
4. Illiteracy of farmers: Another major factor that hinders effective access to information among Kano State farmers is lack of modern education, which affects farmer's productivity. Most of the farmers are rural based, therefore, they lack the necessary skills required to access and use information using high level gadgets like computers. Hence to boost their productivity, they require prompt and update

information through simple modern means of communication (Adekunle, 2004).

### IV. CRITICAL ANALYSIS OF THE FACTORS

In order to formulate a workable solution to the menace of information starvation amongst farmers in Kano State, it is necessary to examine the factors listed above and analyse them with the view of extracting the most common feature among them so as to provide means of mitigating the menace.

When we look at the first factor, which is financial incapacitation of farmers, inferences can easily be drawn from the basic economic principles of developing macroeconomics from microeconomics. However, for decades, government agricultural programme has been underplaying the role of microeconomics by paying lip service and infinitesimal budgetary allocation to agriculture partly because of oil money, which drives more than 80% of the country's economy. This led to neglect of the sector and hence the manifested poor condition of farmers. The little budgetary allocation to the sector hardly drips down to the farmers as the corruption mops up the allocation before it reaches the common man. This worsen the situation throwing farmers into abject poverty. Hence neglect and corruption have been identified as the major feature in this factor.

Government finger print is visible in almost all of the factors as inadequate infrastructural facilities lies squarely on government's shoulders and corruption is identified as the major depleting source of those facilities. Government spent large percentage of its budgets on infrastructural developments but the majority of the projects are in the town, rather than rural areas. Where projects are situated in rural areas, corruption ensures its execution in substandard style and this means throwing the project back to square one in few years' period.

The fact that communication services are provided by private organizations in Nigeria seems to absolve the government from the fault of poor network system in the country. However, government can have a role through the regulatory bodies to enforce good service delivery through customer right protection. So lack of proactive measures is hereby identified as the major feature in this factor. While illiteracy as factor is influenced by both government attitude and people attitude towards knowledge acquisition, lack of adequate extension workers is purely the fault of government. While corruption and conservative behaviour of rural people are the main features in the former (illiteracy), lack of proper design of area-tailored program is identified as the main feature in the latter (lack of adequate extension workers).

The aforementioned features are deeply interrelated as their association with the factors intersects with varying degrees. The most common features across the factors is corruption, which manifest in many forms as substandard execution of capital projects, diversion of essential amenities meant for farmers, failure of check and balance and connival tendencies



between government regulatory agencies and private communication firms. With current efforts of government to stamp corruption in all sectors, most of its top officials do not have direct contact with the farmers. As a result, they rely on information provided by junior or middle level officers, who often distort the true situation with doctored reports. Hence, a weak point is hereby identified for exploitation so that a programme that can generate a bridge between the farmers and decision making bodies can be produced.

#### V. LESSON FROM KENYA AND CHINA

With the emergence of the new digital era, access to information and its dissemination is made easy through mobile calls and simple messaging systems (SMS), which connect people and help in disseminating information (Brinkman & Wessler, 2003). They are easy to use and significantly facilitate direct communication. Despite the fact that there is an effort made by the government to provide new Mobile access advisory services to farmers (Vignare, 2013), the move is devoid of essential networking services such as linking farmers to market, getting access to financing through mobile phones and getting general information that may be beneficial to empowering farmers (Vignare, 2013). To this end, a reference is hereby drawn to what is currently being practiced in Kenya by agricultural commodities exchange, where they use Safaricom SMS platform to link farmers to market (Vignare, 2013). Another programme known as “Kilimo Salama” provides a platform where insurance is provided through exclusive mobile buying system in which farmers can pay for inputs such as fertilizer, pesticides among others. The flat form also provides a means of linking farmers to market, facilitate access to credit and inputs (Vignare, 2013).

A similar case is experience in china by BASF leading Grower App, who provide prompt, comprehensive and precise agricultural and technological information service to meet the needs of large-scale farmers. The farmers can manage planting more efficiently via their phones, receive weather reports, learn about agricultural technologies and pest control. They are also able to consult with BASF experts through long-distance guidance about agricultural problems. “It is a systematic job to help farmers improve quality and profits,” (BAFS, 2018).

#### *Proposed Cluster Communication Model*

Therefore, the study proposed its contribution by indicating that Federal, State and local government should strive towards establishing a combined modern and traditional information centres for utilizing effective agricultural information. The modern means is through cluster telecommunication system. Mobile phones can be used by farmers, members of the community and government workers to connect and communicate (Fawole and Oladije, 2012). For the system to mitigate the effect of communication gap, a platform that can link the farmers directly with the policy makers, agricultural extension and other managerial staff through mobile SMS is

imperative to get adequate agricultural information. This will help in changing the mind-set of the farmers and staffs as the cluster incorporates all level of staff. The communication should have a check and balance system for circumventing the middle level staff monopoly of twisting information. The three communication stages of the proposed programme include; the *enlightenment*- where farmers will be trained on how to send and receive messages, the kind of information they will access among others. *Implementation* is where flat form will be established for linking the farmers to get adequate and reliable information regarding market, access to money, credit and sales through SMS. In the implementation stage there is the need for assigning code where the moment a farmer need to get any information can easily access it by dialling the code. This reduces expenses of transportation and the cost born when expert will go round from one farmer to another. *The feedback mechanism* is where the farmer will receive response regarding their request. This method of bottom-to-top linking farmers with policy makers and other stake holders will empower farmers by guarding against corruption that embeds most of Government financing schemes.

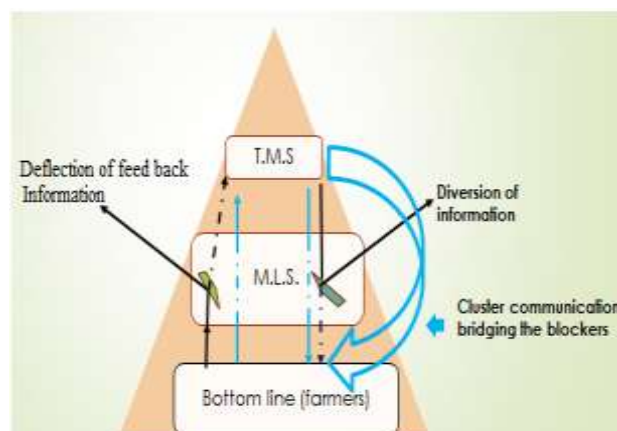


Fig. 1. Cluster communication model. TMS is Top Management Staff, MLS is Middle level staff

#### *The stepwise procedure of cluster communication Model*

The features of the model as stated above are essential for the success of the strategy. However, the enlightenment stage is not shown in the figure of the model because is the pivot upon which the whole system revolves around. From the figure above, it can be deduced that bottom heavy structure that signifies a pyramid communication pattern up to the top actors is ensured. The middle class or intermediary category have crucial role to play in the relay of information from top to bottom, where they often divert or distort the information to their advantages. They also have critical role in flow of information from bottom to top where feedback from farmers to top management staff is often deflected. However, due to the problems stated which include corruption; the middle category always has filters to trickle down information the way they wish and screen information from bottom to top at their discretion. So, no matter how prudent and diligent a top

official is, they can dictate what information goes to the top of the pyramid and that which goes to the bottom of the pyramid.

Having identified this obstacle, the model tries to introduce a simple but modern communication means that can bypass the middle level filters for effective communication. Hence it is expected that farmers will have more access to inputs, finance and other agric-related amenities issued by government scheme for improving productivity. From the figure, the Balack lines represents the prevailing communication pattern and state where disjointed /incomplete information (dotted lines with arrow) are delivered. The blue lines represent the proposed means of relaying information where the information passes through the middle level staff and reaches the farmers intact without obstruction by any filter and vice versa. This can be achieved through cluster communication platform where farmers received all the information through text messages and send their inputs by entering codes to indicate where they are having problems and need attention. Through this method, Top management staff can identify if the middle level staff carry their job or not because double entry of problem code after dispatch is an indication that the problem is not yet solved.

A typical example of such farming tools often provided by government but diverted by middle level executers is the services of tractor for tilting farm lands. Farmers often finished the farming season not knowing that tractors were provided for them only to see it in another farm given on rent basis for years

#### V. CONCLUSION AND RECOMMENDATION

Going by the identified problems of communication gap, many factors are found responsible for the poor access of information among farmers in Kano State ranging from financial incapability of the farmers, inadequate infrastructural facilities, poor network system, illiteracy of the farmers and insufficient extension expert with a common factor of corruption that link all the factors. Therefore, the study suggested recommendations as follows;

1. Close monitoring from the relevance bodies responsible for evaluating the success or otherwise of any financing programmes.
  2. Establishing cordial relationship between financier's and farmers
  3. Improve infrastructural facilities: This means that traditional rural Information centres should be furnished with communication infrastructures. In every rural community relevant and up to date information and communication devices, such as computers with internet access, local area and wide area networks, radio and television sets, telephones and fax machines, multimedia projectors, video and audio recorders so as to address the information coverage inadequacies. Likewise, providing adequate physical infrastructural facilities such as good roads, constant power supply, good networking to ensure
- reliable access of agricultural information to empower farmers.
  4. Provision of financial incentives: The lack of purchasing power problem of farmers is major issue where majority cannot bear the communication cost government should collide with the communication enterprises to give certain incentive just like cost relief among others.
  5. Improve public awareness campaign: This means massive public campaign should be encourage at all level. So as to create awareness among farmers on new modern means of getting agricultural information, telecommunication means inclusive. This can also be done through training, seminar and workshops by the extension workers to farmers.
  6. More extension workers should be employ to better serve the farmers in receiving optimal information

#### REFERENCES

- [1] Adamu, I. K. (2016). *Analysis of value chain on irrigated tomato in Kano state, Nigeria*.
- [2] Adegoke, A. S., & Babalola, I. T. (2011). Quality of service analysis of GSM telephone system in Nigeria. *American journal of Scientific and Industrial Research*, 2(5), 707-712.
- [3] Agwu, A. E., Ekwueme, J. N., & Anyanwu, A. C. (2008). Adoption of improved agricultural technologies disseminated via radio farmer programme by farmers in Enugu State, Nigeria. *African journal of biotechnology*, 7(9).
- [4] Aliyu, S., Yusof, R. M., & Naiimi, N. (2017). The role of moral transaction mode for sustainability of banking business: A proposed conceptual model for Islamic microfinance banks in Nigeria. *International Journal of Social Economics*, 44(12), 2238-2256.
- [5] Anderson, J., Leach, C., & Gardner, S. (2016). National Survey and Segmentation of Smallholder Households in Uganda. Understanding Their Demand for Financial, Agricultural and Digital Solutions.
- [6] Barau, A. S. (2006). An account of the high population in Kano State. *Research and Documentation Directorate, Government House, Kano*, 1-29.
- [7] Bichi, A. I. (2017). The effect of agricultural credit on agricultural productivity in Bichi local government area, Kano State, Nigeria. *KIU Journal of Social Sciences*, 2(2), 257-265.
- [8] Brinkman, W., & Wesseler, G. (2003). Bridging information gaps between farmers, policy-makers, researchers and development agents.
- [9] Chen, Z., Liu, C., & Yang, D. (2011). Information Poverty and Farmers' Information Right in China's Mountainous Rural Areas. *Procedia Engineering*, 15, 1277-1281.
- [10] Danlami, A. H., Islam, R., Applanaidu, S. D., & Tsauni, A. M. (2016). An empirical analysis of fertiliser use intensity in rural Sub-Saharan Africa: Evidence from Tofa local government area, Kano State, Nigeria. *International Journal of Social Economics*, 43(12), 1400-1419.
- [11] Ekoja, I. I. (2003). Farmers' access to agricultural information in Nigeria. *Bulletin of the Association for Information Science and Technology*, 29(6), 21-23.
- [12] FAO, I. (2015). WFP (2015) The state of food insecurity in the world. In Meeting the.
- [13] Fawole, O. P., & Olajide, B. R. (2012). Awareness and use of information communication technologies by farmers in Oyo State, Nigeria. *Journal of agricultural & food information*, 13(4), 326-337.
- [14] Galbraith, J. K. (2017). *Money: Whence it came, where it went*. Princeton University Press.

- [15] Karim, A. J. (2011). The significance of management information systems for enhancing strategic and tactical planning. *JISTEM- Journal of Information Systems and Technology Management*, 8(2), 459-470.
- [16] Kshetri, N. (2016). Big data's role in expanding access to financial services in China. *International journal of information management*, 36(3), 297-308.
- [17] Kidwell, D. S., Blackwell, D. W., Sias, R. W., & Whidbee, D. A. (2016). *Financial institutions, markets, and money*. John Wiley & Sons.
- [18] Mohammed, A. I. (2016). The Viability of Salam Finance In The Growth Of Agricultural Production In Kano State, Nigeria. *Asian journal of multidisciplinary studies*, 4(12).
- [19] Obidike, N. A. (2011). Rural farmers' problems accessing agricultural information: A case study of Nsukka local government area of Enugu State, Nigeria.
- [20] Ogunbado, A.F. & Ahmed, U. (2015). Bay' Salam as an Islamic Financial Alternative for Agricultural Sustainability in Nigeria. *Journal of Islamic Economics, Banking and Finance (JIEBF)*. Vol. 11, No 4.
- [21] Okpachu, A. S., Okpachu, O. G., & Obijesi, I. K. (2013). The Impact of education on agricultural productivity of small scale rural female maize farmers in Potiskum Local Government, Yobe State: A Panacea for Rural Economic Development in Nigeria. *International Journal of Research in Agriculture and Food Sciences*, 2(4), 26-33.
- [22] Precision agriculture in the digital era: [https://www.basf.com/cn/en/company/news-and-media/BASF-Information/Food-nutrition/PrecisionJiang\\_Weiqi\\_Manager\\_Marketing\\_Fungicide\\_and\\_Specialty\\_Crop\\_Crop\\_Protection\\_BASF](https://www.basf.com/cn/en/company/news-and-media/BASF-Information/Food-nutrition/PrecisionJiang_Weiqi_Manager_Marketing_Fungicide_and_Specialty_Crop_Crop_Protection_BASF) Date retrieved 13/4/18.
- [23] Sabo, B. B., Isah, S. D., Chamo, A. M., & Rabi, M. A. (2017). Role of smallholder farmers in Nigeria's food security. *Scholarly Journal of Agricultural Science*, 7(1), 1-5.
- [24] Turner, A. (2017). *Between debt and the devil: Money, credit, and fixing global finance*. Princeton University Press.