SOCIO-ECONOMIC AND INSTITUTIONAL FACTORS INFLUENCING FARMERS' PERCEPTION OF THE E-WALLET SCHEME IN KADUNA STATE, NIGERIA

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ZARIA, NIGERIA

DECEMBER, 2015

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY,
FACULTY OF AGRICULTURE,
AHMADU BELLO UNIVERSITY,
ZARIA, NIGERIA

DECEMBER, 2015

DECLARATION

I hereby declare that this dissertation titled "**Socio-Economic and Institutional Factors Influencing Farmers' Perception of the E-Wallet Scheme in Kaduna State, Nigeria"** has been written by me and it is a record of my research work. No part of this work has been presented in any previous application for another degree or diploma at any institution. All borrowed ideas have been duly acknowledged in the text and a list of references provided.

_____ _____

Ibrahim Blama **HENA** **Date**
Student

CERTIFICATION

This thesis titled "**Socio-Economic and Institutional Factors Influencing Farmers' Perception of the E-Wallet Scheme in Kaduna State, Nigeria,"** byIbrahim Blama **HENA** meets the regulations governing the award of the Degree of Master of Science of the Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to God Almighty who made it possible for me to successfully go through this program and to my parents Rev and Mrs. B. D. Hena, for sacrificing a lot for me and my siblings.

ACKNOWLEDGEMENTS

All thanks and glory to God Almighty for the gift of life and good health granted to me during the course of my study. Sincere appreciation and heartfelt gratitude goes to my supervisors; Prof. M. O. Akinola and Dr. E. A. Kehinde, for their time and for painstakingly going through my work and offering suggestions and advice that assisted in shaping this research work. My appreciation also goes to the Head of Department, Prof. Z. Abdulsalam, the Departmental Post-Graduate Coordinator, Dr. M. A. Damisa, my lecturers Prof. T. K. Atala, Prof. D. F. Omokore, Prof. J. G. Akpoko, Prof. E. Ikani, Prof. S. J. Auta, Prof. M. K. Ajala, Dr. M. W. Musa, and Prof. E. B. Tologbonse.

I am highly indebted of gratitude to my mentor Prof. B. O. Ogunbameru for constantly being there to advice, support and provide close guidance and especially for allowing me tap from his vast store of knowledge and experience. Deserving special mention for moral, financial and spiritual support, in no particular order are; my parents, Rev. and Mrs. B. D. Hena, Mr. and Mrs. Madu Hamman Mshelbwala, Dr. and Mrs. MaduBwala, Mr. and Mrs. James Maryah and Rev. Dr. Philip AsuraNgadda. I sincerely appreciate Mr. Bata Badawi Hena, Mr. and Mrs. Dauda B. Hena, Arhyel B. Hena, Bata B. Hena, Musa T. Musa, Mr. and Mrs. Ezekiel Shapshi, Mr. and Mrs. Ezekiel Kuje, Barr. & Mrs. Dauda Hassan, Mr. and Mrs. TarhyelMshelia and finally Mr. and Mrs. T.S. Ngadda.

To my friends, notable among whom are; Nathan I. Dibal, Yadika Charles Shapu, Matthew N. Kure, Hamman Stephen Mshelia, VandiGamba, Benjamin Bako, Salihu Samuel Wamdeo, IshakuYakubuMshelia, UsijuSatumari, Barka Sambo, Ishaku James Mshelia, Daniel JarafuMamza, Francis Saleh, Christopher Ibrahim, AdamuWakirwa, JemimahBwala

and KwanyeBitrus I am short of words to describe how grateful I am for your encouragement, labour of love and sacrifice and for constructive criticisms. God almighty, the all-knowing will reward you all in no small measure.

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ABSTRACT

This study examined socio-economic and institutional factors influencing farmers' perception of the e-wallet scheme. Multistage sampling technique was used to select 189 respondents for the study from two of the four ADP zones in Kaduna state. Descriptive statistics and multiple regression analysis were used to analyze the data obtained using structured questionnaires. Results revealed that majority of respondents were youths between 26 and 46 years. Average age and household size of respondents was 37 years and 7 persons respectively. Although most farmers had few (<4) contacts with extension agents, 90% of them were aware of the Growth Enhancement Scheme/E-wallet while 60% had access to inputs through the scheme. More farmers (46%) utilized the fertilizer component of the scheme as compared to only 16% that utilized the seed component. Multiple regression result on socioeconomic influence on perception indicated that age, education and membership of cooperative were significant at 1% significance level while farm size and extension contact were significant at 5%. The hypothesis that "there is no significant relationship between farmers' socio-economic characteristics and perception" was therefore rejected. Bureaucracy ranked as the most important constraint to effective utilization of inputs through the scheme, shortage, inadequacy and late arrival of inputs were still identified as constraints despite efforts put in place under the scheme to reduce exploitative tendencies of middle men. For the GES/E-wallet to be effective, the study suggested that input allocation modalities be reviewed by the Federal Ministry of Agriculture and Rural Development to ensure farmers get inputs that are sufficient for their scale of operation and on time, rather than giving all farmers a blanket-treatment of two bags (100kg) of fertilizer. The study contributed to knowledge by revealing high rate (96%) of mobile phone ownership among farmers which could easily be exploited by the Government and other Private Agencies in delivery of mobile phone-based agricultural extension services to farmers, thereby helping to bridge the existing ratio gap between extension agents to farm family. The study also revealed an increase in the number (60%) of farmers who had access to subsidized inputs as compared to (30%) reported from previous subsidy schemes.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Agricultural inputs are important components of the agribusiness value chain considered as necessary to be able to produce and meet the quantity demand of markets (Adesina, 2012; United Nations Industrial Development Organization, UNIDO, 2011). The use of such in African agriculture is, however limited, with serious implications for the goal of increasing agricultural productivity and the supply of adequate raw materials for agro-industrial processing and for consumption.

The World Bank (2007) reported that African agriculture is plagued by extremely low levels of agro-chemical use relative to other developing regions. Citing the average for sub-Saharan Africa as 12.5 kg/hectare of arable land, substantially below both the global average of 102 kg/ha, 89.6 kg/ha in Latin America and the Caribbean and 106.7 kg/ha in South Asia respectively. West African states were found to have the lowest average levels of agro input usage, pegged at an average of 10kg/ha. This is reportedly due to high cost, hence the heavy dependence on government subsidized inputs, as a result of poverty. Such subsidy programs have also been characterised by pervasive problems of late delivery, poor quality and supply of inappropriate quantity and types of fertilizer, due to corruption (Banful, Nkonya, and Oboh, 2010). To be able to produce and meet the quantity demands of markets, farmers need to have access to improved seeds, fertilizers and other farm inputs (Adesina, 2012; Banful, Nkonya, and Oboh, 2010).

The Federal Government of Nigeria, therefore, in its quest to develop agriculture and empower rural farmers for increased productivity, developed and initiated the Growth Enhancement Scheme (GES-E-wallet) policy. The GES is one of the many critical components of the Federal Government's Agricultural Transformation Agenda (ATA), designed for the specific purpose of providing affordable agricultural inputs like fertilizers and hybrid seeds to small scale farmers in order to increase their yields per hectare and make them comparable to world standards (Federal Ministry of Agriculture and Rural Development FMARD, 2014). The policy is aimed at developing the agricultural input component of the agricultural value chain by removing difficulties in the agricultural input sector and transforming agriculture in Nigeria from a development program (dependent on grants) to a self-sustaining business venture (Adesina 2014).

According to Adesina (2012), the scheme's approach is such that beneficiaries are targeted through the use of electronic system. Private sector stakeholders (companies and agro dealers) are involved in the distribution and delivery of fertilizers and other critical inputs directly to farmers to ensure accessibility, affordability, development of the input value chain, and ultimately increasing small holder farmers' output, income and improved livelihoods (FMARD, 2014).

Mobile phones serve as the "Electronic-wallet" (medium) through which inputs are allocated (Atofarati and Monye, 2013).Registered farmers receive electronic vouchers for subsidized inputs via their mobile phones, which they redeem electronically at the rural input retail shops, after paying the cash balance due (Adesina 2012).

Perceptions, according to Vithessonthi(2005), have direct influence upon people's decision-making and the outcome of their decisions.Oladele and Fawole (2007), in a similar vein submits that studying farmers' perception is regarded as recognizing the importance of farmers and their reactions to new technology and innovation. This is because farmers are not just passive consumers but active problem solvers with a stake in agricultural development.Therefore, the need to take into

cognisance their perception of innovations and policies like the E-wallet which they benefit from directly cannot be overemphasized.

There are currently no empirical evidence of the socio economic and institutional factors influencing the perception of farmers on the E-wallet. It was in line with this that the study aimed to investigate socio-economic and institutional factors influencing farmers' perception of the e-wallet scheme in Kaduna State, Nigeria.

1.2 Problem Statement

Ensuring timely access to agricultural inputs by farmers, among others, increases the potentials for higher yield, good resource utilization and improved rural life and livelihoods. However, the agricultural input sector in Nigeria has over the years been plagued by challenges of inefficiencies, ranging from: lack of awareness, diversion of inputs from intended beneficiaries, untimely distribution and poor access to supplies, often too low to meet quantity demanded (Takeshima and Saweda, 2013). Even when made available, inputs were not easily accessed without difficulties as the process for accessing such subsidized inputs are cumbersome (Chirwa and Dorward, 2013). Access rate to inputs in previous subsidy schemes have been reported to be significantly low (30%), despite the huge sums devoted towards such goals. This led to poor yield, because most farmers depend on government subsidized inputs and rain fed agriculture in Nigeria and other African countries (Folayan, 2013).

The GES/e-wallet was developed to address such challenges. It is important that for farmers to effectively utilize policies and programmes aimed at improving their farm productivity levels, their perceptions in addition to their experiences of such programmes must be positive and favourable, for the objective of the programme to be achieved.

This study therefore, aimed at analysing socio-economic and institutional factors influencing farmers' perception of the e-wallet scheme in Kaduna State, Nigeria. The following research questions were answered by this study:

i. what are farmers' socio-economic characteristics in the study area?

ii. Are farmers aware and to what extent do they access and use the E-wallet?

iii. how do farmers' perceive the E-wallet in improving access to farm inputs?

iv. what socioeconomic and institutional factors influence farmers' perception of the E-wallet?

v. what constraints do farmers face in utilizing the E-wallet?

1.3 Objectives

The general objective of this study was to evaluate the socio-economic and institutional factors influencing farmers' perception of the e-wallet scheme in Kaduna State, Nigeria.

The specific objectives of the study were to:

i. describe farmers' socio-economic and institutional characteristics.

ii. assess awareness, access rate and extent of use of the E-wallet technology among farmers.

iii. examine farmers' perception of the E-wallet in improving access to farm inputs.

iv. determine the socioeconomic and institutional factors influencing farmers' perception of E-wallet.

v. identify and describe constraints to effective utilization of the E-wallet.

1.4 Justification of the Study

Improving access to cheap and affordable production inputs is clearly one of the objectives of agricultural subsidy programs. This is evidently due to the important roles input plays in the agricultural sector. For these goals to be achieved, it is important that the pulse of farmers be felt periodically by policy makers and solution providers in the agricultural sector. Evaluating farmers' perception is one of such ways through which information regarding farmers' experiences of the E-wallet scheme could be gleaned to serve as feedback to policy makers in order to complete the communication cycle.

This study therefore provides useful feedback to all stakeholders in the agricultural sector, namely; Policy makers in Government (both Federal and State), International and Local Non-Governmental Organizations (NGOs), Private Sector, Academic and Research Institutions and others with interest in agriculture. Improvements, amendments and additions can therefore be made where necessary in order to ensure that the program achieves the objectives for which it was established; to make inputs available and accessible to farmers at the right time, right channel and in the right quantity necessary to support their scale of operation, for agriculture to be developed into a sustainable business and Nigeria to meet its domestic food needs and industrial raw material requirements.

1.5 Hypothesis

The null hypothesis that was tested from the study is:

> There is no significant relationship between farmers' socioeconomic and institutional factors and their perception of E-wallet.

CHAPTER TWO

LITERATURE REVIEW

2.1 Farmers Socio-Economic and Institutional Characteristics

2.1.1 Socioeconomic Characteristics of Farmers

It has been established that majority of people involved in farm operation are males and fall within the age bracket of 30-45 years Adebayo and Adeola (2008).This, as explained by Muhammed-Lawal*et.al.,* (2009) and Akpan (2010) is as a result of the strenuous nature of farming and its requirement of strength and agility which is said to be a great asset possessed by men in this economically active age group. Age of farmers has been identified among the socioeconomic characteristics likely to influence farmers' decision to utilize a particular innovation, where young farmers are more likely to take risk, accept change and adopt innovations easily while older farmers on the other hand, tend to be conservative toward innovations, due to risk aversion and preference to stick to age-old farming practices (Olagunju and Salimonu, 2010; Devi and Ponnarasi, 2009). Although farming is regarded as strenuous and seen as a masculine activity, Ani (2004) argued that women also contribute significantly in agricultural operations both in production and processing of crops. Damisa*et.al*., (2007) is also of the view that women's contribution accounts for between 60 and 90% including roles such as land clearing, tilling, planting, weeding, harvesting, transporting, processing and livestock management activities. Ekong (2010) agreed with this view, stating further that women perform about 80% of all harvest and processing activities in addition to performing their house hold chores. Nigerian rural economy, as well as urban food security is largely sustained by rural women who also constitute a substantial portion of the population of the nation, hence contribute significantly to Gross Domestic Product (GDP) and agricultural productivity. Ani (2004) concluded that to effectively address the challenges faced by farmers, the

needs of women also have to be considered as they constitute a significant part of the farming population.

The role of education in improving an individual's capacity cannot be overemphasized, it plays a significant role in positively influencing the decision making ability of farmers. Ani *et.al.,* (2007) argued that education enhances the ability to derive, decode and evaluate useful information for agricultural production. Arguing that through education, farmers are able to acquire new improved and effective written material. Educated farmers are able to acquire more information in the form of written material such as magazines, newsletters and farming instruction pamphlets, booklets and on packaged hybrid seeds, pesticides, fertilizers and many more, unlike their less educated counterparts who mostly rely on others for information. USAID (2010) concludedthat educated farmers are more likely to make better farm decision than their uneducated counterparts.

2.1.2 Institutional Factors

The importance of credit has been stressed by Devi and Govt (2012) as an input which ensures adequate working capital as well as infrastructural development. Membership of cooperative society is another important institutional factor. A cooperative is an association formed, owned and run by its members who voluntarily come together to fulfil their needs and are aware of the benefits of collective action Ifenkwe (2009). Some objectives of cooperative societies include; mobilizing resources, modernizing agriculture, increasing the sense of solidarity among members and taking advantage of economy of scale. Traders, cooperatives and input suppliers have been identified by Pearce (2003) as the primary source of credit to poor agriculture-dependent households. They provide credit to farmers as part of input supply and product purchase transactions.

Adequate and timely credit provision significantly increases agricultural output which leads to an increase in the economic development of the cultivators and others working in other related activities, serving as an instrument for stimulating increase in output, income and employment

(Devi and Govt 2012). Although small-scale farmers have relatively more access to informal and semiformal credit institutions than to formal credit institutions (Badiru 2010), Adebayo and Adeola (2008) concluded that co-operative societies accounted for the most dependable source of credit because according to the respondents the societies also perform additional role of helping the members to market their produce as well.

A major approach to the development of agriculture in Africa, as argued by Oladele, Koyoma and Sakagami (2004) is the provision of extension services. Agricultural extension as posited by Ogunbameru (2011) is a process of communication of improved skills, practices, technologies and knowledge to farmers and others who can benefit from such messages. Ani (2007) observed that, unlike other formalised institutions of learning, extension operates informally in a non-classroom situation, therefore, wherever farmers gathered is considered a "class" since their needs are important and dynamic hence eliminating the need for a fixed curriculum or course of study. This also helps eliminate a rigid time for meeting between extension agents and farmers. Devi, and Ponnarasi (2009) found out that every contact with extension agency influenced farmers rate of adoption of a technology by 2.2 times. According to Ogunbameru (2011) to achieve attitudinal change, a suggestion for change must first be received and accepted. This, for farmers is most importantly through agricultural extension agents. Therefore, farmers with frequent contact with extension agents have more tendencies of technology adoption.

USAID (2010) submits that extension service agents help farmers in decision making. This role is in addition to that of teaching and communication of new ideas, technologies and innovations from research centres. It has been concluded by IFPRI (2010) that extension agents help farmers make better and informed decisions. Farmers on their own also tend to keep close contact and seek wise counsel from the extension agents before making critical decisions regarding their farm operations. However, Naswem, Daudu and Ejembi (2008), pointed out that since World Bank withdrew from funding the Agricultural Development Programme (ADP), it lost its vitality and started operating as

a government bureaucracy, where little or no results are achieved. This therefore greatly affected the ability of the agency to effectively and efficiently deliver extension services to farmers. The need to adopt a pluralistic approach to agricultural extension delivery that will ensure mass coverage while ensuring efficient utilization of limited resources; personnel, time and fund is therefore important.

2.2 Agricultural Input Supply in Nigeria

Growth in agriculture is twice as effective in reducing poverty as growth outside agriculture. It has direct and positive influence on poverty reduction by raising incomes and indirectly through labour markets and by reducing food prices (World Bank 2008). Historical evidence, as further reported, indicates that poverty plummeted in China, India, and Vietnam, and other countries that went through major positive shift in agricultural growth. This is also particularly important in countries like Nigeria, where about 70% of the total population are reported to be practicing agriculture. Therefore, if such poor smallholder farmers are able to access inputs that have been subsidized by government, as at when due, it is hoped that their efficiency levels would improve with regard to resource utilization and this could in turn improve Nigeria's food security and general economic development indices.

The term input in agriculture, has been conceptualised byUNIDO (2011) and World Bank to include all implements and hardware, fertilizer, crop protection chemicals, and appropriate agro-processing equipment used in production of value added agricultural products, cash and food security crops used for planting.

Until 2012, the fertilizer distribution system in Nigeria has been majorly run under government subsidy program. This has reportedly stifled the growth of fertilizer value chain in the open market.According to Ogunsumi and Abegunde (2012) the supply of modern inputs such as seed, fertilizer and other associated inputs are important for the promotion of agricultural productivity, especially among millions of small-scale farmers in Nigeria. This is because strong evidence

abounds to suggest that agricultural inputs raise productivity substantially, and that they are essential for sustaining intensive agriculture in the long term without depleting soil fertility.

Agricultural inputs are subsidized as a policy in order to lower the price that farmers pay for their inputs below market prices. Subsidy according to Takeshima and Lee (2012) is payment made from public resources, that reduces the price a buyer pays for a good or service below the price at which the seller provides it. Further analysing subsidy as a negative tax, explaining that quantity produced and quantity consumed increased for subsidized goods or services as opposed to taxed goods.

Agricultural input subsidies are mainly aimed at achieving the following goals:

i. Improve the affordability of agricultural inputs for smallholder farmers;
ii. Improve the accessibility farmers have to inputs;
iii. Develop the input-supply distribution system;
iv. Sensitize farmers to the use of inputs where it may potentially be profitable;
v. Provide social protection for vulnerable groups by increasing productivity and access to food;
vi. Restore soil fertility and improve soil fertility management practices; and
vii. Reduce social costs due to rural-urban income disparities, with broader goals of raising agricultural production and food security (Takeshima and Lee 2012).

Evidences abound that fertilizers can substantially increase crop yields and slow down soil degradation. However, farmers in SSA still lag far behind other developing countries in fertilizer use (IFPRI, 2010). World Bank report have also reported low levels of use of agricultural inputs among farmers in Sub-Saharan Africa (SSA) and Nigeria in particular, due to the high cost of such inputs. Low fertilizer use has also been reported by IFPRI (2010) among the many reasons for low agricultural productivity in Nigeria. The report further cited fertilizer application rate of 13 kg/ha, which is far lower than the 200 kg/ha recommended by the United Nations Food and Agriculture

Organization (FAO). Banful, Nkonya and Oboh (2010) also agrees that fertilizer consumption rates in Nigeria remains among the lowest in the world despite decades of aggressive subsidization. This situationhas been attributed to several problems, among which are; pervasive problems of late delivery of fertilizer, delivery of inappropriate quantities and types of fertilizer to farmers and the diversion of the commodity for sale at higher prices in the open market.

Baltzer and Hansen (2012) suggested that experiences under subsidy programmes are always mixed. Arguing further, they stated that the programmes succeed in positively affecting quantity of inputs used by farmers and increases agricultural productivity in many cases. However, they concluded that subsidies are extremely expensive on the long run, and tend to benefit relatively well-off and better connected farmers. It has been reported by Banful*et. al.*, (2010) in a study covering eight states, (Bayelsa, Edo, Jigawa, Plateau, Sokoto, Taraba, Yobe and Zamfara) that only 30 percent of subsidized fertilizer reached smallholder farmers at the subsidized price in 2008. The fertilizer meant for the remaining 70 percent of farmers are reportedly diverted from intended recipients.

2.3 The Growth Enhancement Scheme (GES)

The Federal Government of Nigeria, in an effort to develop small scale agriculture into viable agribusinesses introduced the Growth Enhancement Support Scheme (GES) which is designed to deliver government subsidised farm inputs directly to farmers by voucher system through their mobile phones (Atofarati and Monye, 2013). It is aimed at providing affordable agricultural inputs like fertilizers and hybrid seeds to small scale farmers in order to increase their yields per hectare and make them comparable to world standards (Federal Ministry of Agriculture and Rural Development, FMARD 2014)

The GES is one of the components of the Agricultural Transformation Agenda with the chief aim of improving access to inputs by farmers.

The scheme is designed to be powered by electronic wallet (E-wallet). The E-wallet is an agro input distribution platform employed by the Government, where farmers are registered in a database with their mobile phones. These mobile phones serve as the electronic wallet (medium) through which inputs are allocated.Under the e-wallet platform, registered farmers receive electronic vouchers for subsidized inputs via their mobile phones, which they redeem electronically at the rural agro dealer shops, after paying the cash balance due as both federal and states government cover fifty percent of the cost (Adesina, 2012).

According to IFAD (2010) voucher system is an alternative to the government-administered system of the fertilizer subsidy program and depends on a viable private agro-input dealer network. The quest to improve fertilizer use by facilitating timely access to it and ensuring that fertilizer subsidies get to intended beneficiaries has been one of the motivations behind the voucher system. It has been reported as an effective way to build private-sector distribution networks where farmers are required to take their vouchers to private input dealers to exchange for fertilizer. Atofarati and Monye (2013) argued that this will provide an efficient and transparent platform for the purchase and distribution of agricultural inputs.

Adesina (2012)reported that the E-wallet project does not only provide farmers with farm inputs but also serves as an avenue for education on agricultural best practices and information dissemination on commodity market intelligence.

2.4 Prospects and Challenges of Mobile Phone Technology in Nigeria.

The ubiquitous presence of mobile phones in Africa and Nigeria, in particular, has broadened the scope of communication by facilitating contact and reach to those who were otherwise alienated from crucial informational resources (Ninsiima, 2013). The mobile phone is one of the Information Communication Technologies (ICT) tools widely used. According to the Technical Centre for Agricultural and Rural Cooperation (CTA, 2003) ICTs are broadly defined as technologies which

facilitate communication, processing and transmission of information by electronic means, including computers, television, radio and telephone (mobile and fixed) among others. According to the World Economic Forum (WEF, 2011), the revolution in mobile communications is providing a lifeline to agricultural communities around the developing world. Pyramid Research (2010) submitted that ICTs, if well harnessed, could provide a proper platform for development across all sectors of the economy. They further noted that it doesn't only contribute to the development of commercial activities, education, health and governance, but also serves as key enabler of broad based social, human and economic development.

Sife, Kiondo and Macha (2010) opined that access to mobile phone alone opens up hitherto isolated communities to communication and information flows (from production to marketing of agro produce to improvement of social and professional networks) which such communities can utilize to expand or improve their livelihoods.

With access to modern telecommunication services now within the reach of more than 90% of the people who live within Nigeria (Pyramid Research, 2010).Saravanan (2014) opined that it has become a necessity and no longer a luxury, suggesting that, irrespective of age or gender, rural or urban, everyone uses a mobile phone. The technology has diffused rapidly, as current figures indicate that there are more than one hundred million active mobile telephone lines as at August 2014, with spread, both in rural and urban areas. This is a massive increase as compared to about four hundred thousand (400,000) lines which existed over ten years ago (NCC, 2014; Osang, Tsuma and Ngode 2013). The falling cost of simple mobile phone and sharing of devices among friends and family has been explained as the reason for this exponential increase. This growth has been described as a revolution (Murthy, 2011). As coverage of mobile phone networks increases in African Caribbean and Pacific (ACP) countries, discussions on introducing mobile systems in the agricultural sector has moved from "whether" to "how" it is going to be explored for agricultural

purposes. It has eased communication and spurred economic growth and socio economic benefits in many countries (Mammo, 2014).

Bhavnari*et.al.*, (2008), submits that, potential contribution of the mobile telecommunication industry can only be imagined. Citing the speed and relative ease with which the mobile phone technology affords such information as important factors. Further arguing that mobile telecommunication encourages economic and social growth and has been applied to other diverse uses, including being successfully deployed in mobile learning, information transfer, mobile banking (M-Pesa in Kenya, Mobile Money in Nigeria) due to the low cost and convenience it affords.

The revolution in mobile communications has already begun to benefit farmers, even in remote regions of the world. Mobile telecommunication services are at work in the field of Agriculture, mostly for sharing and obtaining information. Diga (2008) and Pyramid Research (2010) established that tasks that previously required farmers to embark on long distance and costly travels have been greatly reduced or completely avoided in some instances through simple phone call or SMS message.

Illiteracy has however been blamed for inability of farmers to fully take advantage of convenience afforded by mobile phone technology. Hassan and Semkwiji (2011) noted low level of literacy as having affected the extent of use of the mobile phone technology among farmers, citing illiteracy as the reason farmers tend to use and show more preference for voice call (which is relatively costly) than Short Messaging Service, (SMS) even though it is cheaper and can be stored for future reference and learning. This in addition, is because of the limitations of SMS, including the technological and lingual illiteracy of some farmers (Ninsiima, 2013).

2.5 Empirical Findings on Perception Studies

Perception has been described as referring to a range of beliefs, judgments and attitudes (Slegers, 2008). Rogers (1995) conceptualised perception as the process by which people receive information or stimuli from their environment and transfer it into psychological awareness. It is a psychological process of appraisal and interpretation of events. This is influenced by experience, emotional state and expectations. Farmers' perception is central to their full participation in development programmes and initiatives, this is because they feel they have a stake in it, hence they take ownership. Ayansina(2011) opined that percepts have measurable, developmental time-line with tendencies for change and at other times yield more than one view.

The relative advantage of an innovation, as perceived by members of a social system, is positively related to the degree to which a technology is perceived as being better than the idea it supersedes, (relative advantage) consistency with the existing values and experiences (compatibility), difficulty to understand or use (complexity), availability to use on a limited basis (triability) and visibility to others (observability). Perception about these attributes of innovation will influence adoption behaviour. These perceived attributes would vary according to individuals' different personal characteristics (Rogers, 1995).

Bryant *et al*., (2008) in a study of farmers' perception on climate change found out that farmers' perceptions are important in adaptation as they determine decisions in agricultural planning and management by the farmers. Farmers can be influenced by peers' perceptions and values within their community. Perceptions influence the ways in which humans act, understand the world around them and how they make decisions. It provides deep insights into how people understand things, so as to better comprehend the ways in which humans make decisions and why they behave in certain ways. It has been reported by Rogers (1995) that perceptions have a direct influence upon people's decision-making and the outcome of their decisions to participate in programmes. Participation and empowerment are key factors in perception and sustainable development. Local ownership is

essential to sustain capacity but depends on wide-spread participation, which in turn requires empowerment.

2.6 Theoretical Framework

Theories have been explained as bodies of fact which explain a phenomenon. The theory of Social Change was used to underpin this study. The approach mentioned was chosen to guide the study because of its relation to the study enquiry.

2.6.1 Theory of Social Change

The theory of social change was highly influenced by Charles Darwin's "Theory of Organic Evolution". Social change is conceptualised as a state of dynamism which precludes stagnation which when managed properly could lead to development of a social system (Adekoya and Tologbonse, 2011). Ekong (2010) in his definition of social change stressed that social change is a modification in human attitudes and behaviour pattern as a result of education and alteration in social conditions and as a result of changes in the policies of a social organization, including consequences and manifestation of such changes. Social change as further explained could either be planned or unplanned. Planned change, being a situation where there is a conscious, deliberate and intended attempt to bring about change by one or more agents (Rogers, 1995).

The introduction of the e-wallet is a planned social change. This is because the policy seeks to introduce a new system of agricultural input distribution for effective and efficient farm productivity and improvement in livelihoods of farmers in Nigeria. This system of input procurement and distribution has been designed to bypass vested interests, which in the past have hijacked the programme (Adesina, 2012). Farmers are now expected to own and be able to access subsidized agro inputs through their mobile phones, which they are to use in redeeming subsidy vouchers. This change requires a great deal of adjustment in terms of education on how to effectively use this

medium for maximum benefit by farmers while at the same time addressing the issue of vested interests trying to resist this initiative. Therefore, this study attempts to find out how farmers perceive the E-wallet policy.

2.7 Conceptual Framework

A framework is a way of representing the empirical relations between every aspect of inquiry when considered a scientific theory or research. It describes the general direction and the constraints of the theory or research.

Socioeconomic and institutional characteristics of farmers including age, educational background, years of farming experience, contact with extension agents, and membership of farmer based group, access to credit, farm and family size are expected to significantly influence farmers' perception. While education is expected to have positive association with perception, a priori expectation on the influence of age is negative as younger farmers are expected to have favourable attitude towards the E-wallet and be more receptive to it than much older farmers. Institutional factors: contact with extension agents, membership of farmer based group, access to credit and other alternative sources of income are expected to have positive influence on farmers' perception of the E-wallet.

If farmers have negative perception on e-wallet, their attitude would be negatively influenced and they may not fully utilise the benefits it affords, but if they have positive attitude towards it, then the goal of the GES policy of improving small scale farmers' production levels will be achieved.

2.8 Conceptual Model

Ekong, (2010) views conceptual model as a broad system of explanation which is not based on prior research findings but largely on untested and unproven assumptions about social realities. It expresses relationship between two or more variables, these relationships can be represented schematically. From this work, it is expected that farmers with positive perception about E-wallet will take advantage of the system and make maximum utility from the policy, while those with

negative perception may have negatively influenced attitude towards the program. It is therefore expected that through continuous education and enlightenment, farmers can be assisted to cultivate favourable attitude, thereby circumventing the effects of negative attitude and perception towards the scheme as it will affect the sustenance of the gains that is hoped to be achieved. The model is as illustrated below.

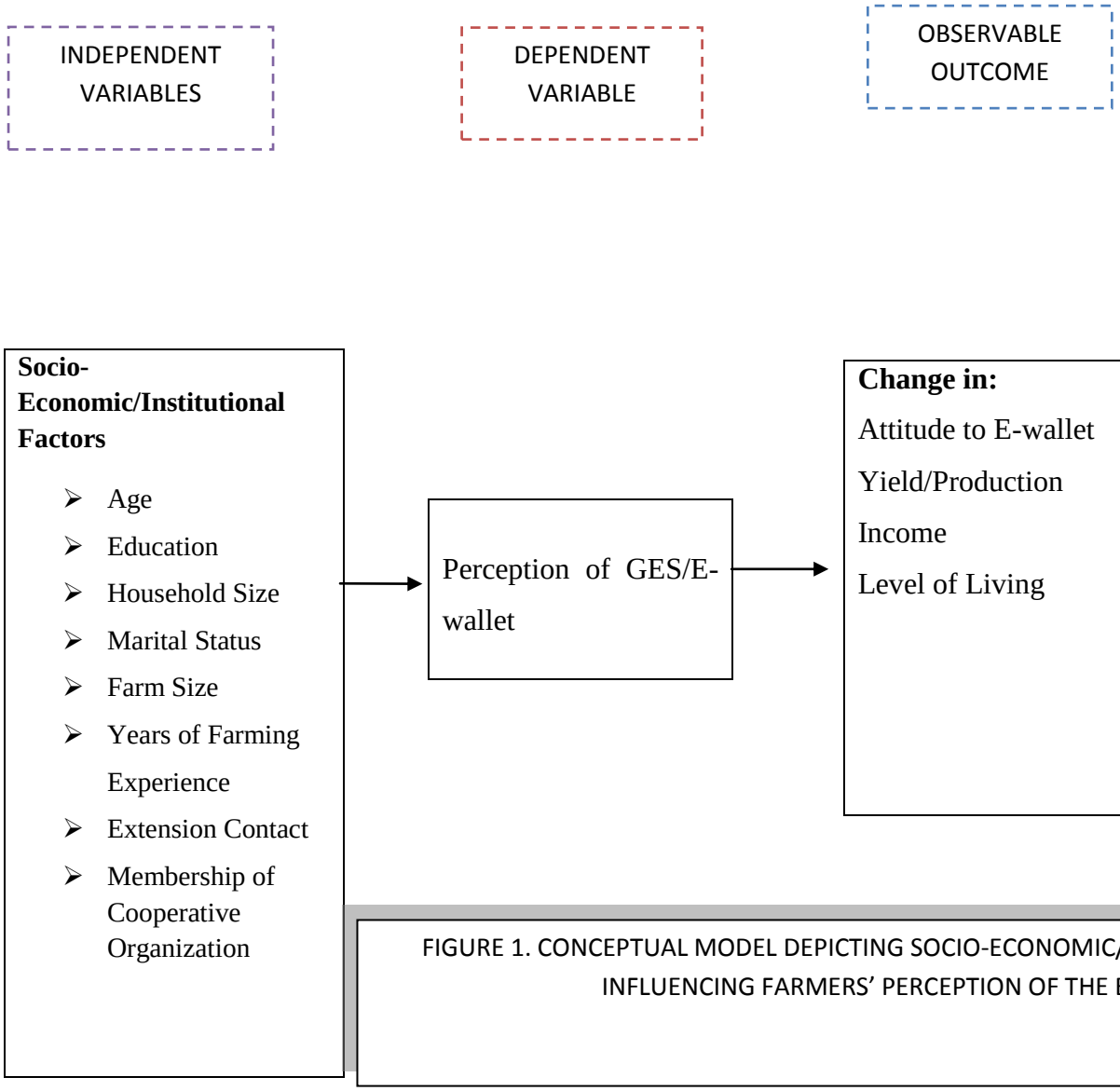


FIGURE 1. CONCEPTUAL MODEL DEPICTING SOCIO-ECONOMIC/INSTITUTIONAL INFLUENCING FARMERS' PERCEPTION OF THE E-WALLET

CHAPTER THREE

METHODOLOGY

3.1 The Study Area

The study was conducted in Kaduna state, North-West Nigeria. Kaduna State lies between Latitudes 9^0 N and 11^0 N and longitudes 6^0 E and 8^0 E of the equator, covering an area of 43,898sq. Km. The vegetation of the state is spread between the Guinea and Sudan Savannah, with two distinct seasons, the rainy season which runs from April to October and the dry season, between November and April. The mean annual temperature range between: 24^0C to 30^0C, which is a typical characteristic of the tropics. Annual average rainfall ranges between 112mm to 150mm (Deloitte, 2006). The state has a 2015 projected population of 7,668,778 at 3.18 percent population growth rate, from the 2006 population census result of 6, 113 503 (NPC, 2006). The state is composed of 23 (twenty three) Local Government Areas.

Languages spoken in the state include: Fulani and Hausa, which are the major languages spoken in the northern part of state, while several other languages are spoken in the southern part of the state among which are: Atyab, Bajju, Ayu, Atuku, Adara, Kurama, Gure, Kono, Amo and kigono (Blench, 2012). The state is also inhabited by others like Yoruba, Igbo among others.

People in the state are engaged in agriculture as the major economic activity, producing food and cash crops, livestock and poultry. Major system of farming is subsistence farming, others are engaged in commercial farming and few others engaged in irrigation (dry season) farming. Crops grown include: maize, cowpea, sorghum, soya beans, and vegetables. The people also engage in trading, artisans and other off-farm activities.

The State Agricultural Development Programme (ADP) is stratified into four (4) agricultural zones, for administrative convenience and effective coverage of the twenty three local government areas. They are: Samaru, Lere, BirninGwari and Maigana zones.

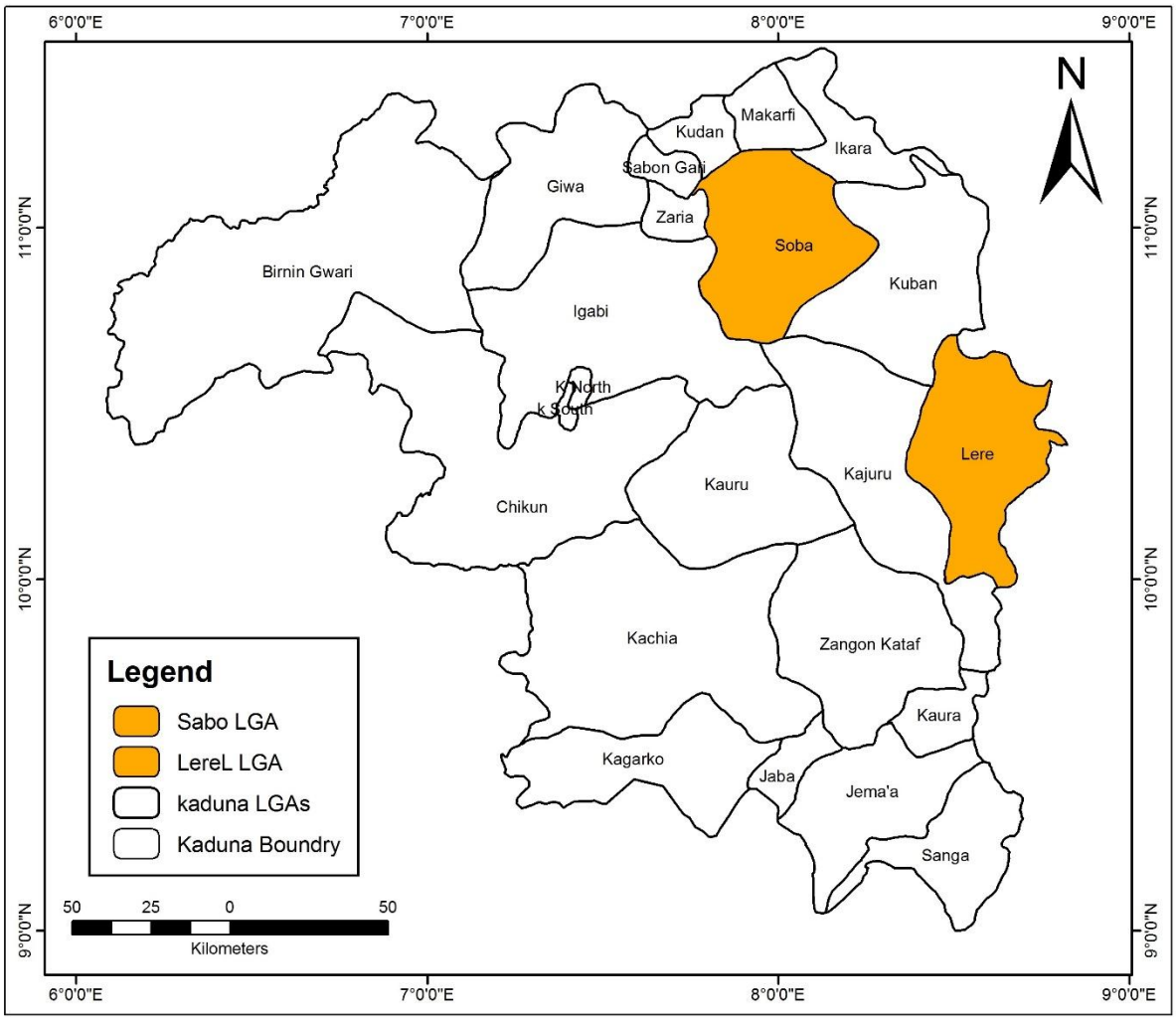


Figure 2. Map of the Study Area
Source: Modified From Nigerian Administrative Map on Google 2015.

3.2 Sampling Procedure and Sample Size

A multistage sampling technique was employed in the study. The first stage involved purposive selection of Lere and Soba agricultural zones. This is because they fall among the pilot GES implementation locations in Kaduna state and secondly due to the intensity of crop production in the zones. The second stage involved random selection of two wards/villages from each of the agricultural zone, to give a total of four wards, (out of eleven wards in Soba and sixteen in Lere) from which ten percent of farmers were randomly selected as respondents from each village, to give a total of one hundred and eighty nine (189) respondents for the study.

Table 3.1: Sampling Procedure

Zone/L.G.A.	**Ward/Village**	**Sampling Frame**	**Sample Size**
Lere	Saminaka	702	71
	Yarkasuwa	250	25
Soba	Soba	473	47
	Rahama	452	46
Total		1877	189

Source: ADP 2014.

3.3 Data Collection

Primary data and secondary sources of information were used in this study. Primary data were collected with the aid of structured questionnaires and interview schedules after conducting a reconnaissance survey of the study area. Research assistants were enlisted, trained and supervised during the course of data collection. Survey instrument was pretested following which information were collected on farmers' socioeconomic characteristics; farmers' perception and experiences with the e-wallet; and constraints farmers face under the e-wallet programme.

3.4 Analytical Techniques

A number of analytical techniques were used for this study. They include descriptive statistics such as frequency distribution, percentages and means, to achieve objectives i, ii, and v. Likert scale was used for perception of farmers. Multiple regression model was used to test objective iv and the hypothesis.

3.4.1 Multiple Regression

The multiple regression model used to test the null hypothesis, that:

"there is no significant relationship betweenfarmers' socioeconomic and institutional characteristics and perception of E-wallet." is given thus:

$$\mathbf{Y = a + b_1x_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 \ldots + b_nX_n}$$

Where:

Y = Perception of E-wallet (favourable = 2, undecided = 1 and unfavourable = 0)

a = Constant

b_1-Xn = Regression Coefficients

X_1 = Age (years)

X_2 = Educational Level (years of schooling)

X_3 = Household size (number of household members)

X_4 =Years of farming experience (years)

X_5 = Extension contact (Number of visit per production cycle)

X_6 = Membership of farmer based organization (Yes=1 and No=0)

e = Error term

3.4.2 Likert Scale

Three point likert scale was used in assessing farmers' perception of E-wallet. This was done by stating the likert items in form of statements regarding farmers' experiences with the E-wallet to which their responses were elicited and scored as: favourable, unfavourable and undecided. Responses from the likert items were interpreted to provide answer to farmers' perception of the E-wallet in terms of accessibility, quantity, timeliness, helpfulness of extension agents.

3.5 Definition and Measurement of Variables

3.5.1 Independent Variables

Age: This is the number of years lived by the respondent as at the time of interview (measured in years). A priori expectation of age was that younger farmers had more tendencies to accept new innovations and try out novel ideas as opposed to older and more conservative farmers.

Educational Level: This refers to the level of formal/informal education attained by respondents and was measured as years spent in training. With regards to education, a priori expectation was that the more educated a farmer, the more enlightened hence the higher the tendency of a positive attitude and perception towards government policies and programs and vice versa for less educated farmers. Education was scored as: Primary=1, Secondary=2, Tertiary=3, Quranic and Adult education=4

Household Size: This is the number of dependents in a particular household. Measured as, number of individuals including the household head. Household size was scored in numbers.

Marital Status: This is the categorization of farmers based on whether or not they are married.A priori expectation for marital status was that married farmers would perceive e-wallet scheme positively as opposed to farmers who were single. Scored as: married=3, single=2, widowed or divorced=1.

Farm Size: This is the total land area put under cultivation by a respondent. Farmers are usually categorised based on farm size as: Small, Medium and Large scale farmers. It is measured in hectares. A priori expectation was that farmers with large land area under cultivation are expected to be very responsive and interested in government policies that are targeted at improving farm productivity hence would have positive attitude despite being able to purchase inputs to cater for their scale of operation.

Farming Experience: This is the number of years a farmer has been engaged in agricultural production. It is expected that older farmers have more farming experience than much younger ones and having mixed experiences from previous subsidy schemes would tend to be conservative and sceptical therefore have a not too favourable perception towards the e-wallet.

Extension Contact: Extension contact here is taken to mean the number of visits the farmer receives from an extension agent in a production year.With challenges of inadequate funding for extension services, the number of extension contact has continuously been on the decline with farmers receiving even fewer or in some cases no contacts at all, especially on a one-on-one basis except through public fora and exhibitions. A priori expectation therefore was that farmers who had extension visits were expected to have and nurture positive attitude to e-wallet scheme as opposed to farmers who had little or no information.

Membership of Farmer-Based-Organization (FBO): This refers to whether or not a respondent belongs to a Farmer-Based-Group (yes=1, no=0). A priori expectation was that farmers who belong to cooperatives or FBOs were expected to develop positive attitude toward policies like the e-wallet scheme due mainly to the fact that cooperatives provide avenues for education and enlightenment of their members through occasional training sessions with experts and through constant interaction with members of other groups.

3.5.2 Dependent Variable

This is farmers' perception, which will be scored as favourable (2), undecided (1) and unfavourable (0), based on response from the likert scale. A priori expectation regarding perception is that experiences are mixed with differences among farmers.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Socio-Economic and Institutional Characteristics of the Respondents

This section describes the socio-economic and institutional characteristics of the respondents. These includes: age, sex, marital status, household size, education, farm size, membership of farmer based organization and years of farming experience.

4.1.1 Age

The results in Table 4.1 indicates that 13% of respondents were between the age of 15 to 25 years and 39% between 26 and 36 years. Those that fell within 37 and 47 years constituted 28%. Similarly, farmers between 48 and 58 years made up 15% while four percent were above 58 years of age. The average age was 37 years, with majority of respondents being between 26 and 47 years. This result implies that farmers in the study area were young and within the age range regarded as economically active, innovative and productive. They therefore had tendencies to experiment and take the risks of trying out new innovations.

4.1.2 Marital Status

Marital status as shown in Table 4.1, indicates that majority, 79% of the respondents were married, and 19% were single. It was revealed that 2% and 1% of the respondents were widowed and divorced respectively. This finding supports the assertion by Ekong (2010) that early marriage is practiced more in rural areas than in urban centres, due to low levels of education, lower aspiration and dependence on agriculture for livelihood. Urban dwellers on the other hand have higher aspiration, have to attain certain levels of formal education, secure white collar jobs and deal with other urban pressures before settling down to family life. Availability of farm family labour serves

as cushion to farmers who in most cases are unable to afford paid farm labour due to their small scale of operation and reliance on agriculture for sustenance.

4.1.3 Household Size

The study revealed in Table 4.1 that 80% had household size of between 1 and 10 people. While 16% had between eleven and twenty household members, 4% had above twenty one household members. Average household size among respondents was 7 members per household. This implies that each farm family had an average of seven household members, most of whom contribute in various ways, playing important roles towards providing family labour for farm production.

4.1.4 Educational Level

Table 4.1 shows distribution of the respondents according to levels of educational attainment. Farmers with secondary education constituted majority (38%) of the respondents. This was closely followed by those with tertiary level of education, with thirty five percent (35%). Respondents with primary level of education made up fourteen percent while adult/qur'anic education took 13%. This indicates that farmers in the study area had basic level education. USAID (2010) observed that the more educated a farmer is, the more the chances that the farmer would adopt innovations. Education has been found to influence farmers' adoption of agricultural innovations. More educated farmers also resort to alternative ways of seeking information on ways to improve their production unlike their uneducated counterparts who have limits to their sources of information due to low levels of education and awareness (Yusuf, Omokore and Musa, 2011).

4.1.5 Farm Size

The distribution of the respondents by farm size as shown on Table 4.1 indicates that forty three percent of respondents had farm size of at least six hectares ($\geq$ 6 ha), thirteen percent had less than 2 ha. Farmers with 2 to 3.9 and 4 to 5.9 hectares of farm land constituted thirty and fourteen

percentsrespectively. It has been established that most farmers in the study area cultivate at least six hectares of farm land. It can thus be concluded from this that farmers did not access adequate inputs from the GES as only two 50 kg bags of fertilizers and 2 to 8 kg of seeds were allotted to each farmer under the scheme. Farmers therefore had to source for additional inputs from the open market, often at exorbitant prices.

Table 4.1: Socio-Economic Characteristics of Respondents (n = 188)

	Frequency	Percentage
Age		
15-25	25	13
26-36	74	39
37-47	52	28
48-58	29	15
59 And Above	8	4
Mean	37	
Sex		
Male	141	75
Female	47	25
Marital Status		
Married	148	79
Single	35	19
Widowed	3	2
Divorced	2	1
Household Size		
1-10	150	80
11-20	31	16
21-30	6	3
31-40	1	1
Mean	7	
Education		
Primary	27	14
Secondary	72	38
Tertiary	65	35
Adult/Quranic	24	13
Mean	7	
Farm Size (ha)		
<2	24	13
2-3.9	57	30
4-5.9	26	14
>6	81	43
Mean	6	

Source: Field Survey, 2015

4.2 Institutional Factors

As indicated on Table 4.2, 73% of respondents had between 1 and 4 contacts with an extension agent within a production cycle. Twenty one percent had between 5 and 8 contacts, 1% had above 8 contacts while five percent had no contact at all with an extension agent. The mean contact with an extension agent stood at 3 contacts per production cycle. Every contact with an extension agent has 2.2 times probability of influencing rate of adoption of technologies (Devi and Ponnarasi, 2009). However, it has been stressed by FAO (2013) that extension agents are grossly inadequate hence cannot provide effective and efficient extension services to the growing population of farmers who desperately need it. The FAO in its baseline study found Low extension reach in most states (Extension Agent - Farmer-Ratio 1:2,500-10,000). Attainment and sustenance of high level of agricultural production and incomes under this condition is not possible (Adereti, 2008). These and other concerns necessitated the call for an extension service model that utilizes Information Communication Technologies (ICTs) like the mobile telephones to reach wide coverage of farmers with extension messages at affordable rates (Sanga*et. al.,* 2013; USAID, 2010).

Majority of the farmers (38%) as shown on Table 4.2had between 11 and 20 years of farming experience. This was closely followed by farmers with less than 10 years experience with 28%, 21% had between 21 and 30 years experience, 10% had between 31 and 40 years experience while only 4% had more than 41 years experience. This is an indication of an active agricultural community with more population of young farmers as compared to older ones. It can also be interpreted to mean that as farmers advance in age and experience, they give way to much younger innovative farmers with strength and energy. This is a positive indicator with respect to adoption of innovations. The younger a farming population, the more responsive to innovation and willingness to try out and accept new ideas. This may partly explain why 90% of respondents are aware of the E-wallet and 60% of them had accessed inputs through the scheme (Table 4.3).

Ownership of mobile phones among farmers surveyed was 96%, only 4% of them did not own mobile phones. This confirms the finding of Pyramid Research (2010) that modern telecommunication service is now within the reach of above 90% of Nigerians. Deloitte and GSMA (2012) also noted that mobile penetration has increased rapidly in the last 12 years. This is attributed to the increased availability of affordable communication gadgets and lower price charged per minute for calls and Short Messaging Services (SMS). This is a good indicator, because ownership of mobile phone increases ones' access to information hence can to a large extent influence one's actions and decisions including learning of best practices from other communities (Ninsiima, 2013). World Economic Forum, WEF, (2011); Sife, kiondo and Macha (2010) asserted that due to access to mobile telecommunication services, agricultural communities around the world that were hitherto isolated have now been opened to new markets and opportunities. Farmers now gather market and production intelligence and seek for extension information unhindered by distance, cost and time.

Majority (61%) of the farmers belonged to a farmer based organization while 39% of them did not belong to any. Cooperatives by their nature are associations formed, owned and run by members who voluntarily come together to fulfil their needs and are aware of the benefits of collective action Ifenkwe (2009). Some objectives of cooperative societies highlighted include; mobilizing resources, modernizing agriculture, increasing the sense of solidarity among members through interaction and experience sharing and also taking advantage of economy of scale. Cooperatives develop strategies and programs that benefit their members, including provision of experts to speak at meetings and events organized by the members which is beyond their reach at individual levels. Adebayo and Adeola (2008) also concluded that cooperative societies are dependable sources of credit support and farm inputs to farmers. Therefore, resource poor farmers who belong to cooperative societies tend to have productive edge over those who did not.

Table 4.2: Institutional Characteristics of the Respondents (n = 188)

Variables	Frequency	Percentage
Extension contact		
0	9	5
1-4	137	73
5-8	39	21
>8	3	1
Mean	**3**	
Farming Experience		
1-10	52	28
11-20	71	38
21-30	39	21
31-40	19	10
≥41	7	4
Mean	**18**	
Ownership of Mobile Phone		
Yes	181	96
No	7	4
Membership of Farmer Based Organization		
Yes	130	61
No	58	39

Source: Field Survey, 2015

4.3 Awareness, Access and Extent of Use of E-wallet Components

Table 4.3 shows the distribution of respondents as revealed by the study, based on awareness, access and extent of use of the GES/E-wallet components. It indicates that 90% of the farmers were aware of the scheme while only 10% of them were not aware. This is an indication that scheme had been publicized well. The same cannot be said of access to inputs through the scheme, where only 60% of the farmers had accessed inputs through the scheme while 40% claimed not to have accessed inputs. This could be due to the bureaucracy that hinder and discourage farmers from accessing inputs.

There were differences in access to the different components among farmers. Most farmers (46%) had used the fertilizer component of the scheme while 38% of them had never utilized the fertilizer component of the scheme. Sixteen percent of them had however used and stopped using the fertilizer component obviously due to the difficulties experienced, late arrival and inadequate quantity of inputs supplied.

Sixty two percent have claimed not to have utilized the seed component of the Growth Enhancement Scheme. While sixteen percent claimed to have used and currently utilizing the seed component. They indicated receipt of maize, rice and cowpea seeds ranging from two to four kilogram (2-4 kg). A total of twenty two percent of the farmers however indicated to have used and stopped using the seed component of the scheme.

Majority (99%) indicated that they have never used the agrochemical component of the Growth Enhancement Scheme. This is probably because agro chemicals had not yet been incorporated as a component of the GES. Therefore farmers still had to access agro chemicals for use on their farms from agro chemical dealers at market price which was often high. This to a large extent can increase the production cost of farmers.

Table 4.3: Distribution of Respondents According to Awareness, Access and Extent of Use of GES/E-Wallet (n = 188)

	Frequency	Percentage
Awareness		
Yes	170	90
No	18	10
Access		
Access	112	60
No access	76	40
Extent of Use of GES Component		
Fertilizer		
Never Used	71	38
Used and Stopped	30	16
Used and Currently Using	87	46
Seeds		
Never Used	116	62
Used and Stopped	41	22
Used and Currently Using	31	16
Agrochemical		
Never Used	187	99
Used and Stopped	1	1
Used and Currently Using	0	0

Source: Field Survey, 2015

4.4 Farmers' Perception of the E-Wallet

Table 4.4 shows the respondents' perception of the GES/E-wallet. The results show that respondents (MS=1.11) perceived the E-wallet scheme as a transparent initiative. However, respondents gave poor rating to other attributes. They disagreed (MS=0.55) that inputs are easy to access through the scheme. They also disagreed (MS=0.87) with the statement that they did not need to know anybody to access inputs. On timeliness of input supply, the farmers disagreed (MS=0.45) that they got inputs when they needed it. This implies that inputs meant for distribution for the season got to farmers late hence their inability to utilize it as at when due. In the same vein, farmers disagreed (MS=0.47) that they got the exact amount of inputs allotted to them which they also stated (MS=0.08) was not even sufficient for their scale of operation. This is in line with the finding on Table 4.1 that the average farm size of farmers from the study area was 6 hectares on which two bags (100kg) of fertilizer was nowhere close to the global average of 102kg/ha (World Bank, 2007). Farmers here would need an average of 612kg (12.2 bags) to appropriately cater for their scale of operation.

Table 4.4: Distribution of Respondents Based on Perception of E-wallet (n = 188)

Likert Items	DA	UN	A	WS	MS	(%)
The e-wallet scheme is transparent	80	7	101	209	1.11	37
Inputs are easy to access through the scheme	132	9	47	103	0.55	18
I do not need to know anybody to access inputs	104	5	79	163	0.87	29
I get inputs from the scheme when I need it	141	9	38	85	0.45	15
I get the right quantity of inputs allotted to my e-wallet	140	7	41	89	0.47	16
Inputs I get from the scheme are enough for my scale of operation	177	7	4	15	0.08	3

DA (Disagree), UD (Undecided) and A (Agree). WS (Weighted Score) and MS (Mean Score)
** Favourable (mean score of >=1) * Unfavourable (mean score < 1)
Source: Field Survey, 2015

4.5 Socio-economic and Institutional Factors Influencing Perception of E-wallet.

The multiple regression analysis result is presented in Table 4.5. The result revealed that the coefficient of multiple determination (R^{-2}) was 59.8%. This implies that the variables in the model were able to explain up to 59.8% of the variation of farmers' perception towards the E-wallet scheme. While 40.2% was as a result of random error term. This implies that the model gave relative fit of the data and that socio-economic characteristics of farmers had relative influence on perception. Farmers' perception towards the E-wallet scheme was influenced by a number of factors. The results indicate that; age, education, household size, farm size and farming experience significantly influenced the respondents' perception towards the E-wallet scheme at different levels of significance. Extension contact and membership of Farmer Based Organization, significantly influenced farmers' perception at 5% level of significance.

The coefficient obtained for age as positive and significant at 5% level of significance. This implies that older farmers had favourable perception towards the E-wallet. This is however contrary to apriori expectation that younger farmers have more tendencies to perceive E-wallet favourably.

Education indicated a negative sign but significant at 5% level of significance. This implies that the more educated a farmer, the less favourable his perception towards he E-wallet. This may be due to access to information from diverse sources which makes them sceptical of the scheme and less reliance on farming as it may be a secondary occupation to them. The coefficient obtained for Household size was negative but significant at 10% level of significance. This implies that the more the number of people within a household, the less favourable the perception to E-wallet. This may be due to inadequacy of inputs accessed from the scheme, hence farmers may see it as insignificant and pay less attention to it, rather relying on input purchase from the open market. This agrees with the finding of Baltzer and Hansen (2012) that experiences under subsidy programmes are always mixed.

The coefficient obtained for extension contact was positive and significant at 5% level of significance. This implies that number of extension visit significantly influenced the perception of farmers on E-wallet. The more contact farmers had with extension agents, the more they had access to information and opportunities for participating in avenues where there is information such as during shows and exhibitions, field trips and field days/demonstrations.

While the coefficient obtained for membership of association was positive and significant at 1% level of significance. This implies that membership of association significantly influence farmers' perception of E-wallet.This is because associations provide avenues for efficient extension service and access to input supply through collaborative effort such that they take advantage of economy of scale.

Table 4.5: Socio-economic and Institutional Factors Influencing Farmers' Perception of E-wallet

Variable	Coefficients	Standard error	T stat
Constant	0.510083	0.234446	2.175694
Age	0.017754***	0.00714	2.486606
Sex	-0.1042	0.070311	-1.48193
Marital Status	-0.02508	0.058414	-0.42933
Household Size	-0.01114*	0.006615	-1.68477
Farming Experience	-0.01351**	0.006682	-2.02246
Farm Size	0.014187**	0.007064	2.00827
Education	-0.02077***	0.006733	-3.08531
Cooperative Societies	0.054932***	0.004718	11.64307
Extension Contact	0.03126**	0.01518	2.05929
R Square	0.598		
Adjusted R Square	0.569		
F-value	3.315***		

Note: **Significant at 5% Level

4.6 Test of Hypothesis

This section presents the tests of relationship between the dependent and the independent variables. The dependent variable was perception (favourable and Unfavourable). While the independent variables were; age, sex, marital status, education, household size, farming experience, farm size and contact with extension agents.

Based on the result in Table 4.5 the hypothesis which states that "there is no significant relationship between socio-economic and institutional factors influencing farmers' perception of the E-wallet" was rejected and the alternate hypothesis is accepted. This is because socio-economic variables: age, household size, farming experience, farm size, education, membership of FBO and contact with extension agent significantly influence farmers' perception on the E-wallet scheme at different levels of significance.

4.7 Constraints to Effective Utilization of E-wallet

Table 4.7 indicates that bureaucracy ranked first as the most important constraint to effective utilization of E-wallet among farmers, while inability to operate a mobile phone was observed to be the least of constraints. This could be interpreted to mean that farmers were made to go through several tiring and time consuming processes ranging from registration, verification, allocation of voucher before going to redeem inputs allotted to them. It also meant that the process was not fully electronic as it had been planned. One of the objectives of the E-wallet was to bring farmers closer to critical inputs while eliminating the exploitative tendencies of middle men. This cannot be said to have been achieved if farmers still had to go through physical verification process and had paper voucher cards issued to them instead of the original plan of having electronic voucher sent to their mobile phones. It is even more worrisome considering the fact that this study revealed that ninety six percent (96%) of the surveyed farmers owned mobile phones and indicated that inability to operate a mobile phone did not pose significant threat to utilization of inputs through the E-wallet scheme.

Untimely supply and shortage of inputs ranked second and third constraints respectively. This is means that the GES, E-wallet scheme was yet to address the issue of timeliness and sufficiency in quantity of inputs supplied. It has been noted by Adesina (2012)that farmers do not get their input requirements as at when due and in the right quantities. This if allowed to persist could hamper the goal of achieving sustainable local food and raw material production in Nigeria. Other constraints identified include: inadequate inputs relative to scale of operation, lack of institutional support or inadequate extension services and technological complexity.

Table 4.7: Constraints to Effective Utilization of the E-Wallet (n = 188)

Constraints	**Frequency**	**Percentage**	**Rank**
Bureaucracy	168	15	1st
Untimely supply of inputs	167	15	2nd
Shortage of inputs	164	15	3rd
Ownership of mobile phone	155	14	4th
Inadequate input	154	14	5th
Lack of institutional support	118	11	6th
Technological complexity	103	9	7th
Inability to operate a mobile phone	81	7	8th

Multiple responses allowed*
Source: Computed from Field Survey Data, 2015

CHAPTER FIVE

SUMMARY, CONCLUSION, RECOMMENDATIONS AND CONTRIBUTION TO KNOWLEDGE

5.1 Summary

The purpose of this study was to assess socioeconomic and institutional factors influencing farmers' perception of the E-wallet in Kaduna State, Nigeria. A total of 189 farmers were interviewed. Primary data were obtained using structured questionnaires administered through trained research assistants under close supervision. Multiple regression model was used to determine socioeconomic and institutional factors influencing farmers' perception.

The study revealed majority (67%) of the respondents were youths between the ages of 26 and 47 years. Majority (75%) were males and 79% were married with average household size of 7 persons. Respondents with secondary education constituted majority with 38% followed by those with tertiary level education by 35%. Farmers in the study area cultivated an average of 6 hectares of land. It was observed that 73% of respondents had between 1 and 4 contacts with an extension agent within last production cycle with mean of 3 contacts. Most of them (38%) had between 11 and 20 years of farming experience. Majority (96%) of them owned mobile phones while 61% belong to a Farmer Based Organization (FBO).

On awareness, access and extent of use of the GES/E-wallet components, it was discovered that 90% of the farmers were aware of the scheme, 10% of them were not aware. While only 60% of the farmers had accessed inputs through the scheme. There were differences in access to the different components among farmers. Majority 62% of the farmers had utilized the fertilizer component at least once. While only 38% had at least once used the seed component. Almost all (99%) indicated

that they had never used the agrochemical component of the Growth Enhancement Scheme. This was probably because agro chemicals had not yet been incorporated as a component of the GES.

Multiple regression results revealed that socio-economic variables such as age, household size, farming experience, farm size, education, membership of FBO and contact with extension agent significantly influenced farmers' perception of the E-wallet scheme at different levels of significance. The stated null hypothesis i., that "there is no significant relationship between socio-economic and institutional factors influencing farmers' perception of the E-wallet" was rejected and the alternate hypothesis accepted.

Bureaucracy, untimely supply and shortage of inputs were identified as constraints to effective utilization of E-wallet by farmers.

5.2 Conclusion

The study set out to evaluate socioeconomic and institutional factors influencing farmers' perception of the GES/E-Wallet scheme in Kaduna state. Findings herein revealed that most of the farmers were youths with basic level education and were fully aware of the GES/e-wallet Scheme. It has been established that majority had accessed fertilizer at least once, from the scheme since inception. Although most of them had utilized the E-wallet, many still remained sceptical about the transparency of the scheme, and registered their displeasure with late arrival, bureaucracy associated with the scheme and inadequate quantity supply of inputs relative to their scale of operation. This is especially due to the fact that most of them were found to cultivate over six hectares which going by global average fertilizer application rate of 102 kg/ha, would require at least 612 kg (12.2 bags), an amount that is far from the two 50 kg bags of fertilizer allotted to each farmer regardless of area cultivated by them. A lot therefore, still remains to be done in order to strengthen the scheme, make it more transparent and enable it achieve the objective of increasing yields per hectare of Nigerian farmers, comparable to world standards.

5.3 Recommendations

In order to improve the effectiveness of the GES/E-wallet scheme, the study recommends the following:

1. That modalities be put in place by the Ministry of Agriculture and Rural Development to increase the quantity of inputs allotted based on scale of operation of farmers. This is due to the finding that average farm size of farmers in the study area was six hectares and the two bags of fertilizer allocated to each farmer was grossly inadequate to cater for their scale of operation.

2. It is important that independent developmental agencies, Non-Governmental Organizations and other private consultants carry out periodic studies and supervision as a quality control mechanism. This is in order to checkmate bureaucratic processes farmers are made to go through and to ensure strict compliance to policy objective of ensuring inputs allotted to farmers arrive on time and are justly and equitably distributed.

3. Continuous enlightenment should be carried out by the Ministry of Agriculture and Rural Development so as to ensure that more farmers have access to inputs (seeds and fertilizer) through the scheme. This will go a long way in helping the scheme achieve its objectives.

4. Farmers complained of having less institutional support in terms of contact with extension agent. Efforts should therefore be put in place to develop ICT/Mobile phone based model for agricultural extension service delivery to augment the traditional service delivery method, going by the finding that 96% of farmers owned mobile phones.

5.4 Contribution to Knowledge

1. The study revealed that 90% of farmers surveyed were aware of the E-wallet scheme and 60% had accessed inputs through the scheme as compared to 30% from previous subsidy schemes.

2. The study established that the high rate (96%) of mobile phone ownership among farmers could be exploited by government and private sector stakeholders, as a cheap and effective alternative to the traditional (Training and Visit) approach of providing agricultural extension services directly to farmers.

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APPENDIX

QUESTIONNAIRE

Dear Respondent,

I am a post graduate student of the department of Agricultural Economics and Rural Sociology, Faculty of Agriculture, at the Ahmadu Bello University, ABU Zaria. I am conducting a research on "Socio-economic and Institutional Factors Influencing Farmers' Perception of the E-wallet in Kaduna State, Nigeria. Kindly assist by completing the questionnaire. All information supplied will be treated with utmost confidentiality, thank you.

INSTRUCTIONS: Please tick the options most appropriate and fill in the blank space where applicable.

SECTION A: Socio-Demographic Data

1. Age (years)……

2. Gender: a. Male ( ) b. Female ( )

3. Marital Status: a. Married ( ) b. Single ( ) c. Widowed ( ) d. Divorced ( )

4. Household size: ……

5. Years of farming experience ……

6. Farm size (ha): ……

7. Level of education: a. Primary ( ) b. Secondary ( ) c. Tertiary Level ( ) d. Adult/Quranic education ( )

8. Are you a member of any Farmer-Based Organization (FBO): a. Yes ( ) b. No ( )

9. Contact with extension agent in previous cropping season ……..

SECTION B: Awareness, Access and Extent of Use of E-Wallet

10. Are you aware of the e-wallet/GES scheme? a. Yes ( ) b. No ( )

11. Have you registered with the scheme? a. Yes ( ) b. No ( )

12. Have you accessed any input through the scheme? sa. Yes ( ) b. No ( )

13. What components of the E-wallet do you utilize?

i. Fertilizer a. Never Used ( ) b. Used and Stopped ( ) c. Used and Currently Using ( ) d. Not Available ( )
ii. Seeds a. Never Used ( ) b. Used and Stopped ( ) c. Used and Currently Using ( ) d. Not Available ( )
iii. Agro-Chemicals a. Never Used ( ) b. Used and Stopped ( ) c. Used and Currently Using ( ) d. Not Available ( )

14. Do you own a mobile phone? a. Yes ( ) b. No ( )

15. Which method do you prefer most in requesting for agricultural extension information using your mobile phone? a. Voice call ( ) b. SMS Message ( )

16. Which method do you prefer in receiving agricultural extension information using your mobile phone? a. Voice call ( ) b. SMS Message ( )

17. How many members of your household are registered with the GES-E-wallet scheme? ……

18. How many bags of fertilizer did you get from the scheme? ……

19. What quantity of seeds (kg) did you receive? ……..

SECTION C: Farmers' Perception of E-Wallet

S/N	Statements	Disagree	Undecided	Agree
1	The e-wallet scheme is transparent			
2	Inputs are easy to access through the scheme			
3	I do not need to know anybody to access inputs			
4	I get inputs from the scheme when I need it			
5	I get the right quantity of inputs allotted to my e-wallet			

6	Inputs I get from the scheme are enough for my scale of operation			

SECTION D: Perceived Constraints to Effective Utilization of E-wallet

Do you think the following are part of the constraints facing E-wallet utilization?

S/No	Constraint	Yes	No
1.	Lack of Institutional support		
2.	Shortage of inputs		
3.	Bureaucracy		
4.	Technological complexity		
5.	Inadequate input		
6.	Untimely supply of inputs		
7.	Ownership of mobile phone		
8.	Inability to operate a mobile phone		

Thank you for your time!