

E-WALLET FACILITIES AS AN INNOVATIVE APPLICATION FOR INPUT DISTRIBUTION TO FARMERS FOR ECONOMIC RECOVERY

BY

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Abstract

The study identified the application of e-wallet facilities as an innovative application for input distribution to farmers for economic recovery. Two research questions guided the study. The study adopted survey research design and was carried out in Nsukka local government of Enugu state. The population for the study was 54 consisting of 29 lecturers of agricultural education and 25 lecturers of computer and robotics education from university of Nigeria, Nsukka. There was no sampling because of the manageable size of the population. A 26- item structured questionnaire was used to collect data for the study. The instrument was face validated by three experts, each from the Department of Computer and Robotics Education, Department of Agricultural Education and Department of Computer Science (Faculty of Physical Sciences) all in the University of Nigeria, Nsukka. The data were collected by the researcher with the help of one assistant. The data collected were analyzed using mean to answer the research questions and t-test for hypothesis. The study identified that eleven items were the e-wallet facilities available to farmers for effective inputs distribution; Paytm, Mobikwik, among others. It was revealed that there are fifteen ways farmers could benefit in utilizing e-wallet; transferring and receiving money, tracking purchases and information among others. It was recommended among others that the government should ensure the sustainability of the scheme by playing its specified roles as obligated in order to permit long lasting benefits among farmers in their procurement of input to enhance their productivity for economic recovery.

Key words; agricultural inputs, e-wallet, innovations, economic recovery

Introduction

Agriculture plays prominent role in sustaining the economy of most countries in the world. In Nigeria, agriculture was the mainstay of the nation's economy before the discovery of oil (petroleum). In 2015, the agricultural sector contributed about 23% of the country's Gross Domestic Product (GDP), having approximately 75% share of non-oil exports earnings (Amurtiya, Abdu Karniliyus, & David Chinda, 2018). According to the National Bureau of Statistics (2012), agriculture has the potentials for employment generation, food security, poverty reduction, foreign exchange earnings to the nation and generation of raw materials for agro-allied industries (Godson-ibeji, Chikaire, & Anyaoha, 2016). In the process of agricultural production different types of inputs are used to enhance agricultural outputs.

Agricultural inputs are great determinant of yield in any type of agricultural production. Agricultural inputs are range of materials which are used to enhance agricultural productivity and they include improved seeds, fertilizers, crop protection (in form of chemicals) and machinery for irrigation and other purposes (Nwaobiala & Ubor, 2016). In the view of Obayelu (2016), achieving any modern agricultural transformation and productivity in Nigeria depends among other things on the availability and accessibility of agricultural inputs. The backbone of any agricultural revolution is access of farmers to modern agricultural inputs. Inputs quality, availability, affordability and accessibility are pivotal for farmer's income generation. Agricultural inputs contribute to successful crop production, farm productivity and profitability.

Fertilizers supplies nutrients to the soil that are essential for growth, crop protection in form of chemicals (pesticides, herbicides, insecticides and fungicides) control weed species, harmful insects and plant diseases that afflict crops, technical knowledge and machinery enhance human labor effectiveness and increase farm productivity (African Fertilizer and Agribusiness Partnership, 2015). The challenges facing agricultural inputs includes but not limited to high cost of farm inputs, inadequate subsidies on farm inputs, lack of active farmers' organization, inaccessibility to loans, poor road network resulting to high cost of transport, distant input market, insufficient extension services and limited use of Information and Communication Technologies (ICT) /innovative device applications for input delivery (Jayne, Mather, Mason & Ricker-Gilbert, 2013).

Innovation refers to the use of existing or new knowledge, technologies or inventions to generate socio-economic benefits for users (Fatunbi, Youdeowei, Ohiomoba, Adekunle, and Akinbanijo, 2016). Contextually, innovation is defined as a change, a process in different modification, a novel idea or strategy, implemented to meet a new or an existing need/demand. The innovative endeavor of the federal government towards agricultural input will create great impact in the production output thus, improving sustainable agriculture, productivity, food security, economic income and recovery.

Moreover, in the distribution of agro inputs such as fertilizer, seeds and agro chemicals, they are faced with fraudulent practices such as high level of corruption, insincerity and political

interruption in the distribution channels, supply of adulterated fertilizers, thus damaging the environment and then the large proportion of these inputs are unable to reach the farmers (Adebo, 2014). Furthermore, for more than four decades, the Nigerian government sought to support its agricultural sector through the procurement and distribution of fertilizer and other inputs to farmers in the country, but throughout those decades, they have failed to genuinely achieve these objectives to the vast majority of the Nigerian farmers which according to Okunseinde (2015) was due to "government reliance on a broken and corrupt system resulting to the siphoning of billions of naira and a small percentage of farmers actually receiving the inputs" (Jato & Terna, 2015). The use of agricultural inputs remains insufficient and thus grossly affects farmer's productivity and income. Therefore, it was against this backdrop that the Federal government of Nigeria opted out of direct procurement and distribution of agricultural inputs to farmers in July 2012; they introduced the Growth Enhanced Support Scheme (GESS) which is aimed at delivering subsidized farm inputs to farmers through an electronic wallet (Etuh, 2012). As part of the GES scheme, the Federal Ministry of Agriculture and Rural Development (FMARD) announced that the ministry would equip millions of farmers in the rural areas with mobile phones, they further stressed that the project would link farmers directly to government and vice-versa so that Government would be able to monitor the progress of farmers as well as disseminate valuable information to them (Agwu, Ndakotsu, & Ifeonu, 2019). The goal of this scheme is to provide subsidized agricultural inputs, such as fertilizers, hybrid seeds and agro-chemicals to

farmers, to remove the usual complexities associated with input distribution in order to increase farmers' productivity, income and promote food security (Agbarevo & Ukagha, 2018). The GES scheme, according to Adesina (2012), is powered by e-Wallet (Agwu, Ndakotsu & Ifeonu, 2019).

Electronic wallet (E-wallet) is an electronic distribution channel which provides an efficient and transparent system for the purchase and distribution of agricultural inputs based on a voucher system (Agwu et al., 2019). The e-wallet (electronic wallet) system is an innovative and motivational mobile technology to assist farmers with access to fertilizer inputs, seeds inputs, financial services, agricultural information tips, and other inputs, thereby increasing the yields and outputs of farmers (Famakinwa, Alabi, Ola, & Adeyemo, 2017). An e-wallet in this context is defined as an efficient electronic device system that makes use of vouchers for the purchase and distribution of agricultural inputs to farmers for increased productivity. The scheme guarantees that registered farmers make use of e-wallet to redeem fertilizers, seeds and other agricultural inputs from agro-dealers at half the cost, the other half being borne by the federal government and state government in equal proportions (Agwu et al., 2019). With worldwide access, e-wallets facilities which include but not limited to Paytm, Mobikwik, Alipay, American express, Microsoft wallet, Paypal, Google pay, Skrill, Lemon wallet, Walmart pay, Vemon are excellent to facilitate online payments.

The e-wallet approach is designed for smallholder farmers, who appear to be the most vulnerable by the impropiety in the fertilizer and

other inputs sector of the Ministry of Agriculture. The criteria for farmers' participation include: farmers should be above 18 years old; farmers' should have participated in a survey authorized by the government to capture farmer personal detailed information; farmers' should own a cell phone with a registered SIM card and have at least sixty naira credit in the cell phone. The fulfillment of these conditions guarantees the issuance of an e-wallet voucher to the farmer. The voucher is used to redeem fertilizers, seeds and other agricultural inputs from agro-dealers at half the cost (Famakinwa et al., 2017). According to the Federal Ministry of Agriculture and Rural Development (FMARD) (2012), the GESS as powered by e-wallet represents a policy and pragmatic shift within the existing fertilizer market stabilization programme and puts the resource-constrained farmer at the centre through the provision of series of incentives to encourage the critical actors in the fertilizer value chain to work together to improve productivity, household food security, income of the farmer and economic recovery (Agwu et al., 2019). Understandably, with the introduction and efficiency of e-wallet system opening unique connecting link as it targets the farmers directly with the critically needed modern farm inputs on real-time basis, farmers in Enugu state are encouraged to make use of the e-wallet system for economic recovery.

An economic recovery is part of an economy's expansionary phase which occurs after a recession. Much like a recession, an economic recovery is not always easy to recognize until several months after it has begun. Economists use variety of indicators, including gross domestic product (GDP), inflation, financial

markets and unemployment to analyze the state of the economy and determine whether a recovery is in progress (Will, 2018). Economic recovery is a business cycle stage following a recession that is characterized by a sustained period of improving business activity and during an economic recovery, the gross domestic product (GDP) remains positive with ebbs and flows as the economy rebounds (Ganti, 2019). Economic recovery in the context of the study is defined as the ways by which farmers are able to obtain what have been lost in the process of agricultural production during recession through the application of innovative technologies to increase productivity, income and promote food security. Agriculture being one of the key sectors of the economy is outlined in the Economic Recovery and Growth Plan (ERGP) to help arrest the problem of food insecurity, generate employment, improve foreign exchange earnings and drive industrialization. Thus, the planned activities must be carried out appropriately and meticulously to ensure the achievement of the stated goals.

However, the agricultural sector in Nigeria is dominated by small scale farmers using traditional methods. It was observed that despite various efforts geared towards agricultural development, it has been estimated that 65% of Nigerians are living with hunger as food production is still as low as 2.5% per annum Adebo (2014). Thus, the principal objective of Enugu State Agricultural Development Project (ENADEP), is to increase food production and incomes of small-scale farmers in the project areas and thereby increase total food supply and raw materials for the growing population, and the agro-based industries, which will be achieved by

producing a package of essential inputs, and an efficient delivery system through the farm service center (ENADEP, 1994). In Enugu state, agricultural output remains extremely low and this is as a result of low crop yields and much lower use of internal and external inputs and therefore the potentials of e-wallet system for input distribution are to be utilized to ensure economic recovery.

The findings from this study are beneficial to extension agents, farmers and educational researchers. The extension agents will benefit from this study as the findings would give them better knowledge on the available e-wallet tools and how farmers will benefit from utilizing e-wallet facilities. They would disseminate the information to the farmers by organizing trainings and one-on-one contact farm visit. They would get the information through research institutes as they are the mediator between the agricultural research stations and the farmers. The study will also provide information to farmers as it will equip them to be aware of the available e-wallet tools and how farmers will benefit from utilizing e-wallet facilities. The findings will be available to farmers through the extension agents. The result of the study will be of benefit to the educational researchers as it will serve as a literature source/ reference material to those interested to conduct similar research on the e-wallet tools and how farmers will benefit from utilizing e-wallet facilities. The information on the findings of the study will get to them through accessing the library as a copy of the journal will be taken to the library.

Purpose of the Study

The general purpose of the study is to identify the e-wallet facilities as an innovative application for

input distribution to farmers for economic discovery. Specifically, the study sought to:

1. Identify the e-wallet facilities available to farmers for effective inputs distribution.
2. Determine the ways farmers could benefit in utilizing e-wallet facilities available for effective inputs distribution.

Research questions

In order to achieve the research objectives, the following research questions were asked;

1. What are the e-wallet facilities available to farmers for effective inputs distribution?
2. What are the ways farmers could benefit in utilizing e-wallet facilities available for effective inputs distribution?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

Ho1: Significant difference does not exist in the mean responses of Agricultural education lecturer's and computer & robotics education lecturer's on the e-wallet facilities available to farmers for effective inputs distribution.

Ho2: There is no significant difference in the mean responses of Agricultural education lecturer's and computer & robotics education lecturer's on the ways farmers could benefit in utilizing e-wallet facilities available for effective inputs distribution.

Methodology

The study adopted survey research design. Survey design according to Check & Schutt (2012) is the collection of information from a sample of individuals through their responses to questions. A survey design is considered suitable for the study as it will elicit information from the

respondents using questionnaire on the identification of e-wallet facilities as an innovative application for input distribution to farmers for economic recovery in Nigeria.

The study was carried out in Nsukka LGA of Enugu state. Enugu state was preferred for this study because of its great agricultural potentials. The state is also preferred because it has high interest on the increase in food production which is expected to be achieved by producing package of essential inputs, and an efficient inputs delivery system. The population for the study was 54 made up of 29 lecturers of Agricultural Education and 25 lecturers of Computer and Robotics Education all in the University of Nigeria, Nsukka. There was no sampling because of the manageable size of the population. The instrument for data collection was a structured questionnaire developed from literature reviewed for the study. Each item in the questionnaire is on a four point response options of highly available; moderately available; slightly available; and not available for part A and strongly agree; agree; disagree and strongly disagree for part B with the values of 4,3,2, and 1 respectively.

The instrument was face validated by three experts to ensure validity, clarity, suitability of items, missing information and other observed errors. These was carried out by three experts, each from the Department of Computer and Robotics Education, Department of Agricultural Education and Department of Computer Science (Faculty of Physical Sciences) all in the University of Nigeria, Nsukka. The researcher with the help of one assistant administered the instrument to the respondents. The data collected were analyzed using mean to answer the research questions making use of SPSS version 20.0. Any

item whose mean value is 2.50 and above was interpreted as agreed/available or otherwise interpreted as disagree/not available. T-test was used for testing the null hypotheses at probability level of 0.05 significance.

Research Question 1

What are the e-wallet facilities available to farmers for effective inputs distribution?

Table 1: The Mean, standard deviation, and t-test result of the analysis of the Responses of Agricultural education lecturer's and computer & robotics education lecturer's on e-wallet tools available. (N1+N2 =54).

S/N	ITEM STATEMENT E-Wallet facilities	N ₁ =29		N ₂ =25		$\bar{X}_G$	SD _G	t-cal	Remarks	
		$\bar{X}_1$	SD ₁	$\bar{X}_2$	SD ₂					
1	Paytm	3.20	.44	4.00	.00	3.60	.51	.02	A	S
2	Mobikwik	3.60	.54	3.60	.54	3.60	.51	1.00	A	NS
3	Alipay	3.40	.54	3.80	.44	3.60	.51	.25	A	NS
4	American express	3.80	.44	4.00	.00	3.90	.31	.02	A	S
5	Microsoft wallet	3.60	.54	4.00	.00	3.80	.42	.00	A	S
6	Paypal	3.60	.54	4.00	.00	3.80	.42	.00	A	S
7	Google pay	3.40	.54	3.80	.44	3.60	.51	.25	A	NS
8	Skrill	3.20	.44	3.80	.44	3.50	.52	1.00	A	NS
9	Lemon wallet	3.20	.44	4.00	.00	3.60	.51	.02	A	S
10	Walmart pay	3.40	.54	3.80	.44	3.60	.51	.25	A	NS
11	Vemon	3.40	.54	3.80	.44	3.60	.51	.25	A	NS

Key: $\bar{X}_1$ = Mean of Agric. Edu. lecturers, $\bar{X}_2$ = Mean of Comp. & Rob. Edu. Lecturer's, $\bar{X}_G$ =Grand mean, SD₁=Standard Deviation for Agric. Edu. Lecturer's, SD₂= Standard Deviation for Comp. & Rob. Edu., SD_G= Grand Standard Deviation, A= Agree, NS= Not Significance, S= Significance

The result on Table 1 shows the mean of responses of teachers on the e-wallet facilities available. The values of the grand mean ranged from 3.90 to 3.50, indicating that the responses of the respondents for all the items fall under agree because they are above the 2.50 cut-off point. The value for the grand standard deviation (SD_G) ranged from .31 to .52, this indicated that the opinions of the respondents were close to one another in their responses. . It can be deduced from the mean values that all the identified items

Results and discussion

The results of the study are presented based on the two research questions answered in Table 1 and 2.

of Table 1 were the e-wallet facilities available. The result indicated that the items 2,3,7,8,10,11 had their t-cal ranging from .25 to 1.00 which is greater than .05 level of significance. Therefore, the null hypothesis of no significant differences was upheld for the entire items except items 1,4,5,6, and 9, which ranges from .00 and .02 which is less than .05 level of significance which means that null hypothesis of no significant differences was rejected for the items. The reason for the variation in the opinion of the

Agricultural education lecturer's and computer & robotics education lecturers could be due to their

different levels of professional coverage and experiences.

Research Question 2

What are the ways farmers could benefit in utilizing e-wallet facilities for effective inputs distribution?

Table 2: The Mean, standard deviation, and t-test analysis of the Responses of Agricultural education lecturer's and computer & robotics education lecturer's on the ways farmers could benefit in utilizing e-wallet facilities. ($N_1+N_2=54$).

S/N	Item Statement Benefits in utilizing E-wallet	N ₁ =29		N ₂ =25		$\bar{X}_G$	SD _G	t-cal	Remarks	
		$\bar{X}_1$	SD ₁	$\bar{X}_2$	SD ₂					
12	Store credit cards	3.60	.54	3.80	.44	3.70	.48	.25	A	NS
13	Open credit lines on farmers behalf	3.60	.54	3.40	.54	3.50	.52	1.00	A	NS
14	Transfer and receive money	3.80	.44	3.80	.44	3.80	.42	1.00	A	NS
15	Track purchases and information	3.80	.44	3.80	.44	3.80	.42	1.00	A	NS
16	Encrypt stored data and funds	3.40	.54	3.80	.44	3.60	.51	.25	A	NS
17	Convenience	3.80	.44	3.80	.44	3.80	.42	1.00	A	NS
18	Streamline purchase process	3.20	.44	3.80	.44	3.50	.52	1.00	A	NS
19	Simplicity in management	2.80	1.09	3.60	.54	3.20	.91	.00	A	S
20	Flexibility with currency	3.40	.54	4.00	.00	3.70	.48	.00	A	S
21	Heightened security protocols	3.20	.44	3.80	.44	3.50	.52	1.00	A	NS
22	Fast transactions	3.40	.89	3.80	.44	3.60	.69	.09	A	NS
23	Thorough records keeping and accountability	3.80	.44	3.40	.89	3.60	.69	.09	A	NS
24	Link of personal accounts and other ID documents	3.60	.54	3.40	.54	3.60	.51	1.00	A	NS
25	Accuracy during data transfer	3.60	.54	3.60	.54	3.60	.51	1.00	A	NS
26	Payment of goods and services	4.00	.00	3.80	.44	3.90	.31	.02	A	S

KEY: $\bar{X}_1$ = Mean of Agric. Edu. lecturers, $\bar{X}_2$ = Mean of Comp.&Rob. Edu. Lecturer's, $\bar{X}_G$ = Grand mean, SD₁ = Standard Deviation for Agric. Edu. Lecturer's, SD₂ = Standard Deviation for Comp.&Rob. Edu., SD_G = Grand Standard Deviation, A = Agree, NS = Not Significance, S = Significance.

The result on Table 2 shows the mean of responses of educators on the ways farmers could benefit in utilizing e-wallet facilities. The values of the grand mean ranged from 3.90 to 3.20, indicating that the responses of the respondents for all the items fall under agree because they are above the 2.50 cut-off point. The value for the grand standard deviation (SD_G) ranged from .31 to .91, this indicated that the opinions of the

respondents were close to one another in their responses. . It can be deduced from the mean values that all the identified items on Table 2 were the ways farmers could benefit in utilizing e-wallet facilities. The result indicated that all the items had their t-cal ranging from .09 to 1.00 which is greater than .05 level of significance. Therefore, the null hypothesis of no significant differences was upheld for the entire items except

items 19, 20, and 26 which range from .00 and .02 which is less than .05 level of significance which means that null hypothesis of no significant differences was rejected for the items. The reason for the variation in the opinion of the teachers and extension agents could be due to their different levels of professional coverage and experiences.

Discussion of Findings

The findings of the study on Table 1 revealed that eleven (11) e-wallet facilities were available as an innovative device in input distribution to farmers for economic recovery. They include Paytm, Mobikwik, Alipay, American express, Microsoft wallet, Paypal, Google pay, Skrill, Lemon wallet, Walmart pay, Vemon. The findings was in concordance with the study of Gakuru, Winters, Stepman (2009) which asserts that the use of mobile phones (e-wallet) enables farmers to access various mobile apps and information from various sources such as research institutes, inputs dealers, government agencies, agricultural extension officers, veterinary doctors' traders and even consumers of their products. This finding also supports the studies conducted by Hudson (2006) who indicated that mobile phone which supports (e-wallet system) is not only adopted for social reasons, but is viewed by the farmer as a facility that will allow for more efficient and informed action to enhance greater productivity.

The study revealed on Table the 2 fifteen (15) ways farmers could benefits in utilizing e-wallet facilities. They include; storing of credit cards, opening of credit lines on farmers behalf, transferring and receiving money, tracking purchases and information, encrypting stored

data and funds, conveniences, streamlining purchase process, simplicity in management, flexibility with currency, heightened security protocols, fast transactions, thorough records keeping and accountability, linking of personal accounts and other ID documents, accuracy during data transfer, payment of goods and services. This finding is in agreement with the reports of Adebo (2014) and Godson-ibeji, Chikaire, Anyaoha (2016), who established that e-wallet quickened accessibility to improved seed, access to fertilizer, subsidized farm input and renewed confidence in government programmes. This result is in consonance with findings of Ibitoye (2012) and Umeokeke *et al.* (2017), who reported that E-wallet system impacted positively on farmers' welfare as well as enhanced household chances of improved living. It is also in support of report of Tiri, Ojoko, & Aruwayo (2015) that highlighted the prospects of e-wallet, positing that the scheme will serve as a stimulus for modern economy and enhance rural income. If this policy frame work is well pursued, it will also reduce Nigeria food import bill and stimulate agricultural export. This finding is supported by Ezech (2013) who noted that e-wallet benefit farmers and increases their productivity. The implication of these finding is that e-wallet system with its numerous gains will help in the agricultural growth and economic recovery.

Conclusion

An understanding of the nexus of agricultural production and economic recovery with a view to drawing up lessons on the innovative device that is aimed at delivering subsidized farm

inputs to farmers for maximum agricultural productivity was the kernel of this research. Using a structured questionnaire and T-test to analyse the data leading to the key findings of the study, It was established that agricultural production was positively related to economic growth and also the study identified and documented the e-wallet facilities available to farmers and the ways farmers could benefit in utilizing e-wallet facilities available for effective inputs distribution which in turn will ensure economic recovery.

Recommendations

The following recommendations are made based on the findings of the study that:

1. The Federal Ministry of Agriculture and Rural Development (FMARD) through the Enugu State Agricultural Development Project (ENADEP) should ensure that farmer's have access to the available e-wallet facilities, this can be achieved through admitting adequate and committed staff at the Redemption centers to make the entire redemption process easy for the beneficiaries.
2. The government should ensure that telecommunication service providers have improved the scope and quality of their services to reach the farmers who mostly reside in rural areas.
3. The government should ensure the sustainability of the scheme by playing its specified roles as obligated in order to permit long lasting benefits among farmers in their procurement of input to enhance their productivity for economic recovery.

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