

STRENGTHS AND WEAKNESSES OF E-WALLET SYSTEM IN AGRICULTURAL INPUT DISTRIBUTION AMONG FARMERS IN OSUN STATE, NIGERIA: IMPLICATIONS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

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Abstract

The study was designed to assess the strengths and weaknesses of e-wallet innovation system of agricultural input distribution among farmers in Osun State, Nigeria. A multistage stage sampling procedure was used to select the respondents. Data were gathered through structured interview schedule from 324 farmers randomly selected from four Local Government Areas of the state. Data collected were analyzed using appropriate descriptive and inferential statistical tools. The results showed that the respondents had a mean age of 44.1 years with majority (74.1% and 94.4%) were male and married respectively. The mean household size of the respondents was 9 persons. Removal of corruption on fertilizer ($mean=2.53$), access to fertilizers at subsidized price ($mean=2.35$), quickened access to improved seeds ($mean=2.27$) and elimination of exploitative activities of middlemen in fertilizer supply ($mean=2.21$) were the major strengths of the scheme. While low quantity of fertilizers allocated to farmers ($mean=3.17$), late supply of inputs ($mean=3.05$), poor mobile network for e-wallet ($mean=3.02$) and low level of awareness of e-wallet by farmers ($mean=3.01$) were the prominent weaknesses of e-wallet. It is therefore recommended that successive government should continue and improve on the approach by addressing the identified weaknesses since the system has great potentials for sustainable agricultural development in the nation.

Key words: E-wallet, farm inputs, perceived strength, perceived weakness, farmers

INTRODUCTION

Agriculture has been the mainstay of the Nigerian economy for several years and is still contributing significantly to the Gross Domestic Product (GDP) of the country [8]. It provides food for the growing population, income to the farming families, foreign exchange earnings to the nation; generate raw materials for agro-allied industries and employs substantial labour force. It is a sector propelled basically by the rural population with many intervention foci on economic and poverty alleviation strides in the country by various development agencies and governmental policies. According to [26], about 76% of Nigeria population lives in the rural areas and about 90% of the rural dwellers engaged in agricultural production as means of livelihood.

According to [5] the perennial inefficient distribution system of farm inputs, namely fertilizers, seeds and crop protection products represents a major constraint to achieving food security in Nigeria. In addition, Agricultural production is mainly carried out by farmers in rural areas. According to [1], most of the farms are fragmented, have low input and low output usages of farm machines, fertilizer and improved seeds have been very low. According to [27] in [1], ten tractors were available per 100 hectares of farmland in Nigeria as compared to 241 tractors per hectare in Indonesia. Also, [16] affirmed that the average usage of fertilizer in Nigeria is 13kg/hectare while the rest of the world average annual usage is 100 kg/hectare. Furthermore, the average usage in Asia reached up to 150 kg/hectare. Asides, less than ten percent of Nigerian farmers could access improved seeds. Analysis of the relative increase in crop yields

in developing countries shows that Nigerians crop yields have the lowest growth rate of 0.2% from 1968 to 2008 as against 1.2 % for China, 2.3% for Indonesia and 3% for Malaysia [26]. The farm outputs could hardly feed the farmers and his families. Hence a large percentage of the farmers depend on imported foods for their family sustenance.

Several attempts have been made over the years to boost farmers' productivity. Among these efforts are the suppliers of farm inputs such as improved seeds, agrochemicals and fertilizers at subsidized prices to the farmers. However, due to high level of corruption, insincerity and political interruption in the distribution channels, large proportion of these inputs could not reach the farmers [1]. [2] pointed out that the old system used in supplying inputs to the farmers was weak, inefficient and fraudulent, hence a large proportion of the farmers could not benefit from it. He stressed that the inputs meant for the farmers were diverted by political elites to other countries for personal gains. It was also noted that most of the fertilizers supplied were adulterated, thus damaging the environment.

It is on this note that Agricultural Transformation Agenda (ATA) was inaugurated in 2011 to meet the yearnings of farmers who were incapacitated in getting access to fertilizers and other farm inputs. It was borne out of concern by the federal government to eradicate the corrupt government dominated fertilizer procurement and distribution to farmers through its agro-input corporation agencies in the states of the country [20]. The programme was introduced based on the inspiration of making farming a competitive business for optimal financial gains. It has policies designed to encourage stakeholders, government, private sector, farming operators and intending farmers in agricultural business to improve agricultural production sustainably, raise household food security and increase farmers income by providing direct subsidy through discounted seeds, fertilizers, agro-chemicals and farm machinery equipment on hire through growth enhancement design of electronic wallet (e-wallet) [22].

The e-wallet (electronic wallet) system, the first in sub-Saharan Africa 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. An e-wallet is defined as an efficient and transparent electronic device system that makes use of vouchers for the purchase and distribution of agricultural inputs [9]; [2]. Growth Enhancement Scheme (e-wallet innovation) opened unique connecting link as it targets the farmers directly with critically needed modern farm inputs on real-time basis. Understandably, the implementation of GES seems to be ahead of other components because of the primacy and urgency of boosting farm-level outputs and productivity. [4] observed that the scheme seeks to provide targeted support for seeds and fertilizers to 5 million farmers per year or 20 million farmers within four years. According to the project appraisal, the GES would generate 5-10 times returns in increased production with the overall benefit-cost ratio estimated at about 16:1.

The e-wallet approach is designed for smallholder farmers, who appear to be the most vulnerable by the impropriety in the fertilizer and other input sector of the Ministry of Agriculture. The criteria for farmers' participation include: farmers being above 18 years old; having participated in a survey authorized by the government to capture farmer personal detailed information; 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 [24]. In 2012, Federal Ministry of Agriculture and Rural Development reported that about 1.5 million smallholder farmers got their subsidized seeds and fertilizers using their mobile phones. It was established that 10 million farmers that registered were given identity cards which allowed the use of biometric information to target them more effectively. Also, over 3.4

million farmers were reported to have received their subsidized inputs in 2013, with the expectation that close to 5 million farmers would be reached by the end of the dry season [4]. The project was expected to provide direct linkage between the farmers and the government so as to enable the government to disseminate valuable information to the farmers, thus ensuring farmers' progress [9].

With GES, the government sought to withdraw from direct fertilizer purchase and distribution, and introduced an alternative system of distribution built on the voucher system. [1] further highlighted that for an agro input dealer to participate in the programme, he/she must own a cell phone with a registered SIM card, understand the process of using e-wallets, and attend training programmes designed for the project.

Despite the aforementioned potentials of e-wallet agricultural input delivery system, there is need to assess the strengths and weaknesses among farmers, thereby revealing the implications of the findings on sustainable agricultural development in the study area and Nigeria at large; hence, this study.

Objectives of the Study

The main objective of the study was to assess the perceived strengths and weaknesses of e-wallet systems of agricultural inputs delivery among farmers in Osun State, Nigeria.

The specific objectives were to:

- (i) describe socio-economic characteristics of the respondents in the study area;
- (ii) determine the perceived strength of e-wallet innovation system; and
- (iii) identify the weakness of e-wallet innovation system as perceived by the farmers.

MATERIALS AND METHODS

Sampling procedure

The study was conducted between May and December 2015 in Osun State, Nigeria which has thirty Local Government Areas (LGAs). A multistage sampling procedure was used to select the respondents (farmers). At the first stage, four LGAs were randomly selected from the State. These were Boripe, Egbedore, Ife Central and Ife East LGAs. At second stage,

three, five, two and eight rural communities were proportionately selected from Boripe, Egbedore, Ife Central and Ife East LGA respectively, based on the number of rural communities in each of these LGAs to make a total of 18 communities. At the last stage, 18 respondents were randomly selected in each of the chosen communities, making a total of 324 respondents in all.

Validated and pre-tested interview schedule was used to elicit information on socio-economic characteristics of the respondents, perceived strengths and weakness of e-wallet systems. The data were analysed and summarized using appropriate descriptive statistics such as frequency counts, percentages, mean among others.

Measurement of variables

The strength of e-wallet was measured by asking the farmers to rate ten statements on strengths of e-wallet in agricultural input delivery system as perceived by them. The reactions were against a 3-point Likert type scale of strength ranging from weak (1 point), strong (2 points) and very strong (3 points). The total score per respondent was calculated as strength score. Furthermore, weakness of e-wallet was measured by asking the respondents to rate ten statements on the weakness of e-wallet system in agricultural input delivery as perceived by them. The reactions were against a 3 point Likert type scale ranging from fairly weak (1 point), weak (2 points) and very weak (3 points) as used by [18].

RESULTS AND DISCUSSIONS

Socio-economic characteristics of farmers

Results in Table 1 reveal that majority (74.1%) of the respondents were male; suggesting that males are more into farming than females in the study area probably because of their more energetic prowess for agronomic exercises than their female counterparts. In addition, majority (69.2%) of respondents were within the age group of 30-60 years with the mean age of 44.1 years. This implies that majority of the farmers were in their active and productive age. Therefore, they are energetic to undertake onerous and tedious tasks in farming

operations. This could enhance their effective participation in e-wallet scheme and enhance greater productivity. Vast majority (94.47%) of the respondents were married, this suggests that they are people with responsibilities. Majority (80.1%) of the respondents had one form of education or other while few (19.9%) did not attend any school. This implies that majority of the farmers were literates which could assist them to benefit better in the scheme than the illiterates. This result is in tandem with the findings of [15; [6]; [21] who submitted that education and training improves the skill, attitude and knowledge of an individual thus sharpening their ability to comprehend and apply innovations with ease. Below half (47.4%) had been visited extension agents within the last one year while more than half (52.6%) had no contact with extension agents. It shows that extension service which is expected to enable farmers to take up innovations and improve production was inadequate in the study area. It has been observed that extension services have positive effects on knowledge, adoption and productivity [15]. This therefore implies that weak extension contact observed would deny farmers some benefits and opportunities in agriculture that could enhance better living among them. The mean average farm size of the respondents was 2.3 hectares. This corroborated the findings of [11] that the mean farm size of farmers in Osun State was 2.38 hectares. This implies that majority of respondents were smallholder farmers. This confirms the fact that the e wallet approach actually reached the target group, i.e. the small scale farmers. Nearly two-third (62.5%) had household size of 6-10 persons with mean household size of 9 persons. This implies that respondents had fairly large household size which could possibly serve as farm labours. This result corroborates the findings of [23] who reported that the mean household size of rural farmers was 9 persons. Vast majority (80.2 %) of the respondents had access to credits from informal sources like friends and farmers' cooperatives which enabled to them to have access to inputs provided by it is time for them to redeem them. Majority (92.4%) of

the respondents possessed mobile phones to access e-wallet while 7.6 percent did not have.

Table 1. Distribution of respondents according to socio-economic characteristics (n=324)

Personal Characteristics	Freq	Percentage	Mean
Age			
≤ 30 years	44	26.2	
31- 60 years	225	69.2	44.1
Above 61 years	45	4.6	
Sex			
Male	240	74.1	
Female	84	25.9	
Educational level			
No formal education	62	19.1	
Primary school	77	23.8	
Secondary school	108	33.3	
Post-secondary education	77	23.8	
Marital status			
Married	306	94.4	
Single	8	2.5	
Widow/widower	10	3.1	
Extension contact			
Had contact	154	47.4	
Had no contact	171	52.6	
Cosmopoliteness			
Had traveled	301	93.0	
Never travelled	23	7.0	
Farm size			
< 1 Ha	156	48.1	
1- 5	120	37.5	2.3
>5	48	14.9	
Possession of mobile phone			
Yes	307	92.6	
No	24	7.4	
Household Size			
Below 5	55	17	
5-9	203	62.5	9
Above 9	66	20.4	
Access to credit			
Yes	260	80.2	
No	64	19.4	

Source: Field Survey, 2015

Majority (93%) of the respondents had travelled from their communities to other communities within the last one year, implying that respondents have wide external orientation which might be exposed them to more information which might in turn have positive

effect on their level of awareness on e-wallet innovation system.

Perceived Strength of E-wallet by Farmers

Results in Table 2 show that removal of corruption on fertilizer (mean=2.53) ranked 1st among the respondents' perceived strength of e-wallet; this indicates that e-wallet platform has been able to address the problems of corruption in the supply of agricultural inputs, thereby achieving one of the main objectives of the scheme. Ensuring increased access to fertilizers at subsidized price (mean=2.35) ranked next, follow by better of access to improved seeds (mean=2.27); elimination of exploitative activities of middlemen in fertilizer supply (mean=2.21); and renewal of farmers confidence in government programmes (mean=2.19). This result implies that e-wallet scheme has been able to address farmers' needs properly by providing fertilizers and seeds at affordable prices without exploitation from middlemen resulting to increasing level of trust and confidence in government agricultural programmes. Other strengths like increased rice/maize production (mean=2.17) and improved quality of produce (mean= 2.05) ranked 6th and 7th respectively, showing that e-wallet scheme has a lot of far-reaching implications on sustainable food availability at household level. While the least ranking strengths include increase in farmers' income (mean=1.83); increase in farm size (mean=1.42) and access to other farm inputs (mean=1.12). This implies that e-wallet system has less impact on farmers' income, their farm size and access to other inputs. This might be due to the fact that very small quantities of inputs were allocated to the farmers in the scheme.

This finding is in agreement with the reports of [1]; [14] who established that e-wallet quickened accessibility to improved seed, access to fertilizer, subsidized farm input and renewed confidence in government programmes. It implies that majority of the respondents' perceived e-wallet programme positively. It could also be inferred that various inputs given to the farmers meet their immediate needs by boosting their agricultural production; improved their well being and also

renew their trust in government programme. This result also corroborates the findings of [3] that submitted that the GESS is a special scheme which seeks to increase farmers (irrespective of gender) access to subsidized farm inputs such as fertilizers and improve seeds through a well-designed and monitored public and private sector partnership. It is also in support of report of [25] 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.

Table 2. Distribution of respondents according to their perceived strength (n=342)

Strengths	Mean	Rank
Removal of problem of corruption on fertilizers	2.53	1 st
Increased access to fertilizers at subsidize price	2.35	2 nd
Better of access to improved seeds	2.27	3 rd
Elimination of exploitative activities of middlemen in fertilizer supply	2.21	4 th
Renews farmers confidence in government programmes	2.19	5 th
Ensure food security through increased rice/maize production	2.17	6 th
Improved quality of produce	2.05	7 th
Increase in farmers' income	1.83	8 th
Increase in farm size	1.42	9 th
Accessibility to other farm input	1.12	10 th

Source: Field Survey, 2015

Perceived Weakness of E-wallet by Farmers

Results in Table 3 show that low quantity of fertilizers allocated to farmers (mean=3.17) ranked 1st among the weaknesses of e-wallet innovation system as perceived by farmers. This suggests that the two bags of fertilizers allocated to a farmer were too small to meet their farm need, it is line with findings [19]; [22] who ascertained that the quantity of fertilizer (2 bags of 50kg- 1NPK & 1 Urea) allocated to farmer was not enough for the majority of farmers that cultivate one hectare of land and above. Late supply of inputs (mean=3.05) ranked 2nd. Indicating that farmers were receiving fertilizers and other inputs very late, sometimes use inputs meant

for rainy season for dry season cropping and this could have negative effect productivity. Poor mobile network for e-wallet (mean=3.02) ranked next, and this could result to late arrival of messages on farmers' mobile phones as poor coverage/connectivity of mobile networks in many rural areas are very poor frustrated some farmers out of the scheme.

This result corroborates the findings of [13] which reported that farmers in most parts of the country were unable to receive text messages with e-wallet system due to poor network from telecommunications service providers, making it difficult to get their packages. Low level of awareness of e-wallet by farmers (mean=3.01) was also identified as weakness but rated 4th, this might be because many farmers were not capture during farmers' registration, implying that GES lacked wider publicity during its implementation stage. This observation gives credence to the submission of [19] who reported that farmers were not given adequate awareness for massive participation in the scheme; and there was untimely access to information on the scheme in many part of Nigeria. Limited number of redemption centers (mean=2.99) and cumbersome procedure farmers go through to get approval for inputs (mean=2.96) ranked 5th and 6th respectively. This is an indication that farmers experienced a lot of stress during registration and redemption processes in form of long distance travelling and long queue at the redemption centres. This might discourage many farmers from participating in the scheme. Other weaknesses include incompatibility of agro-inputs supplied for production (mean=2.85), sharp practices/diversion by project executors/influential people (mean=2.83), Most registered people were not farmers (mean=1.42) and ranked 7th, 8th and 9th respectively. While the least ranked weakness was inability to operate mobile phones (mean=1.08). This implies that farmers did not find it difficult to use their mobile phone to access the inputs allocated to them.

Table 3. Distribution of respondents according to their perceived weaknesses of e-wallet (n=342)

Weaknesses	Mean	Rank
Low quantity of fertilizers allocated to farmers	3.17	1 st
Late supply of inputs	3.05	2 nd
Poor mobile network for e-wallet project	3.02	3 rd
Limited number of redemption centres	3.01	4 th
Low level of awareness of e-wallet by farmers	2.99	5 th
Cumbersome procedure of getting approval for inputs	2.96	6 th
Incompatibility of seeds supplied for production	2.85	7 th
Most registered people were not farmers	2.83	8 th
Sharp practices/diversion by project executors/influential people	1.42	9 th
Loss and lack of functional mobile phones	1.08	10 th

Source: Field Survey, 2015

CONCLUSIONS

Based on the findings of the study, it was concluded that e-wallet (electronic wallet) system, an innovative and motivational mobile technology designed to assist farmers to access agricultural inputs, without the intervention of middlemen, thereby increasing the yields and outputs of farmers. It also removes corruption on fertilizers and renewed farmers' confidence in government programmes. However, the scheme was not without some weaknesses including inadequate quantities of inputs allocated to each farmer, late supply of inputs; poor mobile network coverage; few number of redemption centres; low level of awareness of the scheme and cumbersome procedures in getting approval from cellulators. This shows that the scheme had great potentials for stimulating sustainable agricultural development by generating employment and making food security a reality in Nigeria.

It is therefore, recommended that successive government should continue and improve on the on this agricultural input distribution scheme by addressing the identified weaknesses. For instance, appropriate awareness channels should be employed such as billboards and radio in local language;

quantity of inputs should be allocated based on the farm size of farmers; verification process should be made simple for farmers; number of redemption centres should be increased and closer to farmers for easy access to inputs and procurement and there is the need for mobile network operators in Nigeria to widen their network service coverage to improve phone use in rural areas.

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