

The Effect Of The E-Payment Voucher On The Agricultural Sector On Farmer's Attitudes Towards Supplying Maize To Food Reserve Agency (FRA):-A Case Study Of Luanshya District.

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ABSTRACT: *In Zambia, much attention has not been given to investigate the effect of the e- voucher on farmer's attitudes towards supplying maize to FRA. Therefore, the study investigated the effect of the e-payment voucher on farmer's attitudes towards supplying maize to FRA, case of Luanshya district. The study assessed the effect of the e-voucher on maize yields, the challenges of e-payment voucher, examined if e-voucher improved farmers' access to variety inputs and the effectiveness of e-voucher system. 50 farmers were sampled using purposive and convenience sampling methods and SPSS was used to analyze data. Results showed that 62% respondents were not influenced by e-voucher towards supplying maize to FRA. 66% respondents' yield were increased by e-voucher. However, 86% farmers faced challenges when e-voucher was used. Results further revealed that 64% farmers had access to a variety farm inputs. But 66% respondents indicated that e-payment voucher was effective. The Chi-square test (X^2) showed that the observed P-value (0.264) > standard P-value (0.05) at 1DF. we rejected the alternative hypothesis and conclude that there is no significant association between the e-payment voucher and farmer's attitudes towards supplying maize to FRA. Hence, the e-payment voucher had no effect on farmer's attitude. The study suggested that the government needs to come up with means of curbing the challenges faced before and re-adopt the e-voucher payment system, because of its potential to increase farmer's yields. Further studies to investigate if FRA maize purchase price has an effect on farmers' attitude towards supplying of maize to FRA.*

Keywords: *E-voucher, Maize, Fertilizer, Agriculture, Food reserve agency (FRA)*

1) INTRODUCTION

1.1 Background

The agricultural sector in Zambia plays a critical role in alleviating poverty. on the other hand, it contributes to the country's economic growth, ensures national food security, promotes foreign exchange and offers opportunities for employment. Therefore, the agricultural sector is the backbone of an economy, as it provides mankind with the basic ingredients and raw materials for industrialization (Macaitta, 2016). Luanshya district has approximately 51,000 hectares of land, and 1286 are Small-scale farmers and 7 are large scale farmers. There has been growth in the number of small-scale farmers who practice livestock farming and crop production in the district (LDIP, 2013). Most farmers in Luanshya belongs to cooperative groups and these groups are the means by which farmers access their subsidized agricultural input from the government.

The use of subsidized farm input began during the Asian Green Revolution in the 1960s. Dorward (2009), reported that from the 1960s to the late 1980s, many African countries implemented large scale subsidy systems. The programs were successful but too costly and mostly benefited well to do farmers, according to (Banful, 2010). However, the programs were stopped when markets were liberalized, and this saw the introduction of new farmer support programs in many African

countries. Therefore, the Farmers Input Support Program (FISP) was launched by the Zambian government in 2002 to address the challenges faced by farmers. The program aimed at increasing the availability of agricultural inputs to small scale farmers, increase agro-dealer markets and participation, promote transparency in the distribution of inputs (Kalinda. *et al*, 2006). According to Siame, Lichilo and Siame N. (2017), government faced challenges in implementing the FISP programme, but continued to modify the program until the e-voucher system was introduced. This system required farmers to access farm inputs directly from agro-dealers using an electronic card. Farmers in Luanshya district supply their farm produce to the local people, surrounding towns and the food Reserve Agency (FRA). The FRA is mandated to buy, store and release stocks on the market in times of food stress, provide a market for small scale farmers and attaining market price stabilization CUTS (2018). Therefore, this study attempted to fill in the knowledge gap by examining the effect of the e-payment voucher on farmer's attitude towards supplying maize to food reserve agency (FRA) in Luanshya district

1.2 Statements of the problem

The government of Zambia subsidizes its maize through the Food Reserve Agency (FRA) and the Farmer Input Support Program (FISP), which primarily focuses on maize (UNDP, 2016). Access to farm input was a challenge for small scale farmers in Zambia. Therefore, the Farmers Input Support Program (FISP) e-voucher was the ground-breaking move that the Zambian government initiated to alleviate many of the FISP problems. Nevertheless, in times of food stress, the Zambian government set up the food reserve agency (FRA) to buy, store and release stocks on the market, create a market platform for small scale farmers and achieve market price stability CUTS (2018). However, the food reserve agency (FRA) has had little positive effect in empowering and improving

lives of small-scale farmers by imposing agricultural and food security policies in Zambia, on the other hand, it has adversely affected the role of private sector in maize marketing (Kuteya and Sitko, 2015). Over the years, however, it has been observed that the Food Reserve Agency (FRA) has been struggling to reach the government's maize target as opposed to in the past. On the other hand, it has also been observed that the small-scale farmers are slowly withdrawing from supplying their maize product to food reserve agency (FRA). Therefore, this research attempted to investigate the effect of the e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food Reserve Agency (FRA). The study was the first of its kind. However, few studies have been carried out to assess the effectiveness of e-voucher (Mulozi, 2018), challenges of the e-voucher (Banda and Changala, 2019) and e-payment voucher system performance (Siame et al, 2017). But studies, specifically to investigate the effect that the e-payment voucher had on the farmer's attitude towards supplying maize to food reserve agency (FRA), are not there up to date.

1.3 Objectives of the project

Overall objective

To investigate the effect of the e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food Reserve Agency (FRA) in Luanshya district.

Specific Objectives

- i. Investigating if the e-payment voucher had an effect on farmer's maize yields in Luanshya district.
- ii. To determine the challenges of e-payment voucher system faced by farmers in Luanshya district.
- iii. To investigate if the e-voucher system improved farmers' access to a variety of farming inputs in Luanshya district.

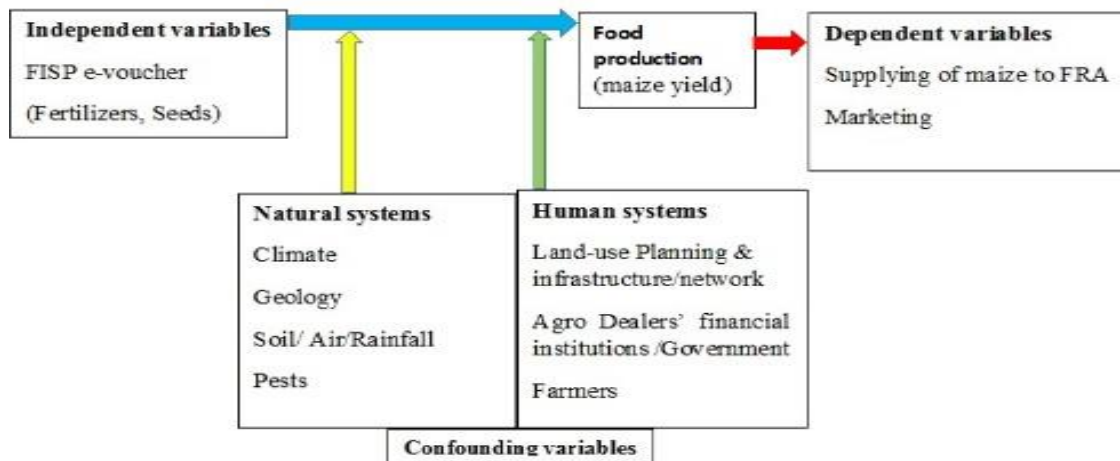
iv. To investigate how effective, the e-payment voucher system was on agriculture sector in Luanshya district.

1.4 Theoretical Framework / Model

The framework highlights the effect of the e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food

Reserve Agency (FRA) in Luanshya district. Therefore, the researchers carried out an investigation to ascertain if the e-payment voucher influenced the farmer's attitude towards supplying maize to Food Reserve Agency in Luanshya district. Hence, the study sought to clarify the concept.

Figure 1.1 Relationship between variables and supplying of maize to FRA



The framework shows the relationship between variables, the interaction and how they contribute to the production of the maize, which is then supplied to food reserve (FRA). The e-payment voucher program was an innovative method that the government employed to distribute subsidized agricultural inputs to farmers through agro-dealers. Therefore, Diffusion of Innovations theory supports the program. The theory is often used in agricultural extensions where technology has been adopted. Everett M. Rogers is the author of the theory, which aimed at investigating the diffusion of many agricultural innovations in a rural community in Iowa. Diffusion of innovation theory thus includes providing an explanation on how an idea or product gains popularity over time and spreads across a particular population or social network. Therefore, in agriculture, innovations are related to food production, improving product quality, conditions of cultivations, and production processes (Van Der Veen, 2010). Therefore, the Zambian government used the theory of diffusion to establish the e-payment voucher scheme.

2) LITERATURE REVIEW

Effect of e-payment voucher on farmers' yields

Sharma *et al.*, (2013), evaluated the India's government variety of schemes for the country's rural and urban area in Sehore district, in order to know the impact among the beneficiaries. The results revealed that the highest yield increase was wheat crops, due to the short-term crop loan. The study had no implications to research, however, it showed that schemes, in form a short-term loan, increases the farmers yield for farmers in India. Fariya *et al.* (2014), investigated the effects of fertilizer subsidy awareness on the yield of crops among Ghana's rural farmers. Six (6) communities and ten (10) households per community were selected using random sampling method. These included; Bawku, Navrongo, Tolon kumbungu and northern Walewale and Ejura and Atebubu in Southern Ghana. Data was collected through questionnaires and analyzed using SPSS. Results revealed that 66.7% were beneficiaries and 33.3% were the non-beneficiaries. Beneficiaries of

fertilizer subsidy program had the highest average production per acre of maize, as compared to non-beneficiaries. The study revealed that, those farmers who were aware of the fertilizer subsidy program had higher crop yield than those who were unaware of the fertilizer subsidy program. The study had implication to research and the findings were supported by Edward (2013), whose study showed that subsidized fertilizer influences the size of the area to be cultivated for crop production, which in turn determines the crop yield.

Kapembwa *et al.* (2015), examined the effects of late fertilizer delivery on the technical efficiency of smallholder maize producers and the foregone national maize production. Data collection was done by using a cross-sectional household survey data for the 2010/11 agricultural season, the Stochastic Frontier Approach (SFA) was used to estimate a plot-level maize yield response model while monitoring whether farmers received their FISP fertilizer on time for endogenous regulation. The results revealed that late fertilizer delivery reduces maize yield by 4.2%. The estimated results were used to quantify the loss of maize output at national level. The study had no implication to research but, it revealed the effect of late delivery of farm inputs on maize yields. These results were supported by (Banda and Changala, 2019), whose findings revealed that inadequate and delayed funding affects the farmers' maize yields.

Challenges faced by using e-payment voucher

Hedström *et al.* (2016), examined the challenges surrounding the introduction of electronic identification (eID) card for professional use in a health-care setting in Sweden. A case of healthcare project implementation of an eID. Data was gathered through interviews with key actors in a project team and end users of the eID. The results of the study revealed that the challenges of implementing and using healthcare eID cards are usability, user behavior and privacy. But these challenges are interpreted differently between

different social worlds. Therefore, in order to minimize these problems related to the implementation and use of eID, the study recommends the need to increase the understanding of the eID card as a socio-technical artefact in which social and technical issues are intertwined. The study had no implication to research. However, it showed the challenges faced in implementing the eID cards in the health sector.

Famakinwa, *et al.* (2017), conducted a study to assess the strengths and weaknesses of e-wallet innovation system of agricultural input distribution among farmers in Osun State, Nigeria. To select the respondents, a multistage stage sampling technique was used and data was collected through structured interview schedule from 324 farmers from four local government areas of the state that were randomly selected. The collected data was analyzed using suitable descriptive and inferential statistical tools. The findings revealed that the e-wallet major strengths were eliminating corruption on fertilizer, promoting access to fertilizers at subsidized price, fast access to improved and elimination of exploitative activities of middlemen in fertilizer supply. The weaknesses were; low quantity of fertilizers apportioned to farmers, late supply of inputs, poor mobile network for e-wallet and low level of awareness of e-wallet by farmers. The study satisfied research and its findings were supported by (Banda and Changala (2019); Fadairo (2015) and Fin Mark Trust (2016)).

Kasoma (2018), performed an evaluation on the input support program for e-voucher that was implemented in Zambia during the 2017/2018 farming season. The findings of the study revealed that the program caused reduction in government costs associated with procurement, transportation and storage of inputs, and also it increased the participation of the private sector in distribution of inputs, the e-voucher, however, faced challenges such as; delays in government funding resulting in late e-cards distribution; poor internet connectivity

and poor flow of information. This study had implication to research in the sense that it showed the kind of challenges that were faced by farmers. Fin Mark Trust (2016), supports these findings.

Access to variety farm inputs through the e-voucher system

Hoddinott *et al.* (2020), examined associations between receipts of an electronic food voucher (e-voucher) compared to food rations on the nutritional status of Rohingya children living in Bangladesh refugee camps. The study utilized cross-sectional data. The heights and weights of 523 children aged 6 and 23 months were measured in homes that received either a food ration comprising of rice, pulses, vegetable oil (362 children) or an e-voucher (161 children) that could be used to buy 19 different foods. The study showed that an e-voucher was associated with improved linear growth in children. Hence, the household receipt of an electronic food voucher instead of a food ration was correlated with improvements in the linear growth of children aged 6 and 23 months. The study had no implication to research but it showed how the use of e-voucher enabled the users to buy food of their own choice, which improved the growth of their children, because the e-voucher provided accessibility to a variety of food that promoted growth.

Nagasawa (2017), the majority smallholder farmers still have little to no use of quality agricultural inputs. The FAO Mozambique therefore introduced the electronic voucher scheme to facilitate the distribution of quality inputs through agro-dealers. The impact of Farmers Field School was thus analyzed on the basis of the cross-sectional inputs' transaction data obtained between 2016 and 2017 through e-Voucher scheme. Qualitative interviews with 70 beneficiaries were conducted. Therefore, to verify the farmers' behaviors toward investment in inputs, five different indicators were determined and these were; Timing, Diversity, Frequency, Balance Amount, and Deposits numbers. The

results revealed that variations occurred across different input seeds (maize OPV, cowpea, and maize hybrid). Further results showed that Farmers Field School increased the early investment, increased diversity, increased frequency, maximized spending on investment on inputs, and increased the depositing behavior. The study had some effect to research, because it showed that e-voucher scheme increased diversity of farm input.

Chibbompa (2018), stated that the Zambian government launched the Farmer Input Support Program (FISP) in 2002 to restore agricultural production in Zambia and increase access to agriculture inputs for small scale farmers. However, government moved away from FISP and implemented the e-voucher system that broadened the target and allowed the farmers to buy beyond maize inputs. Hence, the impact of the E-Voucher system among small scale farmers on crop productivity and income diversification was assessed. The study purposively selected Lukanda Agricultural Camp in Kapiri Mposhi district. Questionnaires were administered to 154 small scale farmers randomly selected, out of which 104 were recipients of FISP e-voucher and 50 were non-recipient. Analysis of data was done using SPSS. The findings revealed that inputs purchased through e-voucher cards were fertilizers, maize seed, livestock drugs, vegetable inputs, CA implements and poultry inputs. Hence, farmers had access to variety farm inputs through the e-voucher system.

Effectiveness of e-payment voucher system

Roshin and Deepthy (2016), conducted a study in Kannur District, India to examine the effectiveness of e-payment in the agricultural sector. The Indian government has implemented many schemes and subsidies to strengthen the agricultural sector. Distribution of the funds however, encountered many problems. Thus, to address the issues, the Indian government implemented a Direct Benefit Transfer (DBT) scheme in which the funds were credited directly to beneficiary accounts. The

research found that the majority of the farmers were not happy with the new payment system, due to delay in obtaining the funds and farmers did not use the subsidy entirely for agricultural purpose. Hence, the e-payment system was introduced to eliminate the problem. This study had implication to research, in the sense that it showed how the e-payment voucher was used as an alternative solution to implementations challenges faced by using Direct Benefit Transfer

Adebo (2014), conducted a related study to test the efficacy of the use of mobile phone-based innovations to meet small scale farmers in Nigeria, using Kwara State as a case study. A formal interview schedule was used to collect information from 200 farmers randomly selected from the four local government areas. The findings revealed that respondents benefited from improved seeds of maize, rice and two bags of fertilizers, the other benefits were prompt access to improved and subsidized farm inputs, increased production and revived farmer's confidence in government programs. However, the program also faced challenges such as failure of telephone network, low awareness among farmers, low density coverage of agro-dealers, and supply of fertilizer and maize seeds. The study recommended an e-wallet awareness campaign, enhancement of rural telephone networking for improved interconnectivity and the scaling up of the amount of government input supply to raise farmers' the production capacity. The study satisfied research, because it showed how effective the e-voucher system was, despite of the challenges. These findings are supported by related studies of (Roshin and Deepthy (2016) and Marulanda *et al.* (2015)).

Kalinda and Simfukwe (2007), built on previous study carried out between 2005-2006 in Malawi and Zambia, Mozambique. The aim of the study was to identify whether (and how) input vouchers could be an effective mechanism for incorporating the non-commercial and commercial input markets and to

establish the value of policy research added to full policy cycle. Therefore, a study was conducted in Western and Luapula provinces of Zambia to build on the previous work in order to ascertain stakeholders' perspectives and views about input vouchers. Data collection was done by interviewing stakeholders in western province who had previously used the input vouchers system, and stakeholders in luapula province who had not used the input voucher system. The research showed that regardless of fraud, certification and concerns about measures of input quality, the input voucher method was the most effective way for government and NGOs to channel inputs, at national level. The study had implication to research, because it showed that the e-voucher was the most effective way for distributing farm input.

Establishment of the gap and Personal critique summary

Studies to examine the effect of the e-payment voucher on farmers' yields in Zambia are not clear, but regionally, there are few studies done but are limited. It is evident from the literature obtained that studies to do with the challenges faced using the e-payment voucher system in the agricultural sector in Zambia are there but few. Literature shows that most researchers focus so much on the challenges that are faced using the e-payment voucher.

Studies to investigate if the e-payment voucher system enabled access to a variety of farm inputs in Luanshya district are rare. Globally and regionally, studies on access to inputs through the e-payment voucher system are also limited. However, (Chibbompa, 2018) focused on investigating whether the e-payment voucher system increased the variety of farm input.

Studies to do with effectiveness of the e-payment voucher system are rare in Zambia. On the other hand, studies to determine the effectiveness of e-payment voucher system globally and regionally are limited.

In conclusion, it is evident from the literature reviewed that technology has evolved, and this has given birth to the use of the e-payment vouchers or e-wallets not only in the agricultural sector but also in other sectors like banking, health and education sector.

And from the empirical literature, e-voucher system has been adopted in the agricultural sector, as well as other sector, and studies have been done on the e- voucher payment system in the agricultural sector. However, studies specifically looking at the effect of e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food Reserve Agency (FRA) in Zambia are not there. Therefore, this study was carried out with a purpose of providing insight and feedback. Therefore, the study contributed to the body of knowledge.

3) METHODOLOGY/RESEARCH DESIGN

3.1. Project Design / Approach

The study adopted a case study research design to assess the effect of e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to food reserve agency (FRA) in Luanshya district. The research design helped in obtaining in-depth information of the effect that the e-payment voucher had on farmers' attitude towards supplying maize to food reserve agency in Luanshya district. On the other hand, a case study research design was used because it was less costly, it was manageable and saved on time.

3.2. Sampling procedure

Non-probability sampling technique was used to select farmers that where easily accessed and available for research in Luanshya district. Therefore, convenience sampling method was used because it made it easy to collect data from farmers that where near the researcher in Luanshya District

3.3. Target populations and Sample size

The targeted population was the farmers in Luanshya district that owned the e-payment vouchers in the past. These farmers were selected

because they had an opportunity of using the e-payment voucher. Hence, they were the best farmers to share the experience they had using the e-payment voucher. On the other hand, these farmers were in a position of expressing their true feelings towards the use of the e-payment voucher. Therefore, this made it possible to obtain accurate answers to whether the use of e-payment vouchers had an effect on the farmer's attitude towards supplying maize to food reserve agency (FRA). Therefore, the case study design made it easy to gain in-depth information that gave a clear picture about the effect that the e-payment voucher system had on the farmers' attitude towards supplying of maize to food reserve agency (FRA) in Luanshya district.

A total number of fifty (50) farmers in Luanshya district were selected using purposive sampling method. This method was used because it made it possible to select farmers that used the e-payment voucher system in the past and these were farmers nearby.

3.4. Instruments of data collection

The instruments that were used to collect primary data in this study were self-administered questionnaires. Self-administered questionnaires were used to collect data from farmers that owned the e-payment vouchers in the past and the study used (structured) closed ended questions in the questionnaires. Structured questions were used because it is easy to code and analyze data. Therefore, the questionnaires were given to cooperative group leaders by hand and these leaders distributed the questionnaires to their members, each time they had group meetings. On the other hand, Secondary data was collected from the library, internet, published articles and journals.

3.5. Data analysis techniques

SPSS and MS Excel were used to analyze data and descriptive analysis was used to produce frequency tables, pie charts and bar graphs for presentation of data. On the other hand, Chi-Square test was done

to measure the association of variables being investigated.

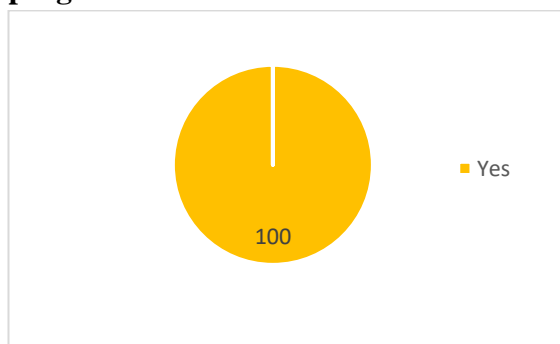
3.6. Ethical Considerations

Before any types of interviews or discussions were held with the respondents, informed consent was sought. In this study, information was given to the respondent through their cooperative leaders about the research so as to ensure that they made informed choices. This ensured that every respondent participated in the study voluntarily. Privacy and confidentiality of the respondents during and after the research was respected. No name of any of the respondents was publicized.

4) RESULTS AND DISCUSSION

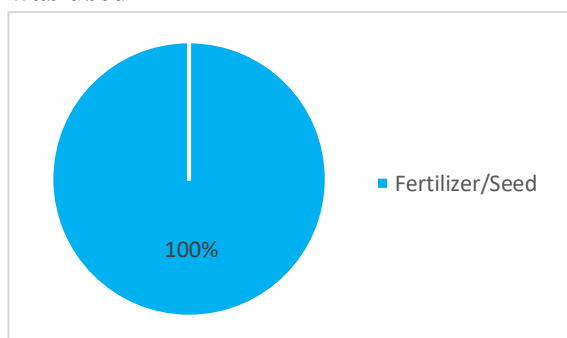
4.1. Results / Research findings

Figure 4.1: Availability of farmers input support program in the area



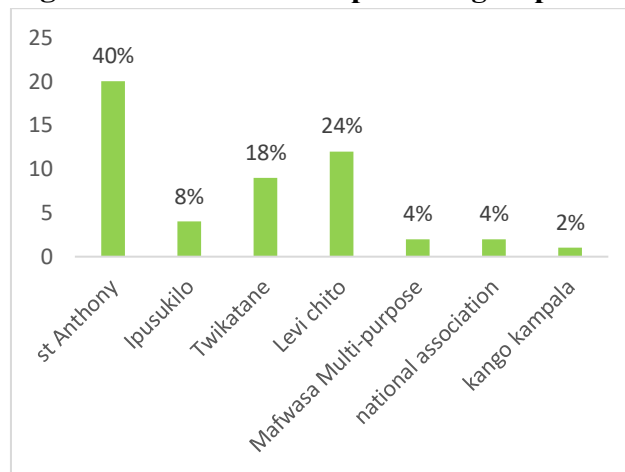
The results of the study revealed that all the respondents indicated that their area was supported by farmers input program (FISP). This program promotes input distribution in Luanshya district. Therefore, farmers of Luanshya district are able to access their farm input through the input support program (FISP).

Figure 4.2. Main input accessed when e-voucher was used



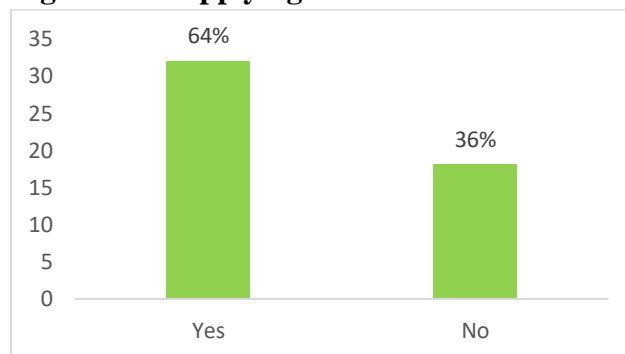
The study revealed that the main farm input that was accessed the time when the e-voucher payment system was in use is fertilizer and seed. All the respondents indicated that they used to access the input using the e-voucher payment system.

Figure 4.3: Farmers' cooperative groups



The results from the analysis showed that the majority respondents belonged to St Anthony cooperative, which was represented by (40%), followed by 24% respondents that belongs to Levi chito, while 18% respondents indicated that they belonged to Twikatane, and 8% Ipusukilo. However, 4% belonged to Mafwasa multipurpose and 4% National association. Only 2% respondent belonged to Kanga Kampala cooperative group.

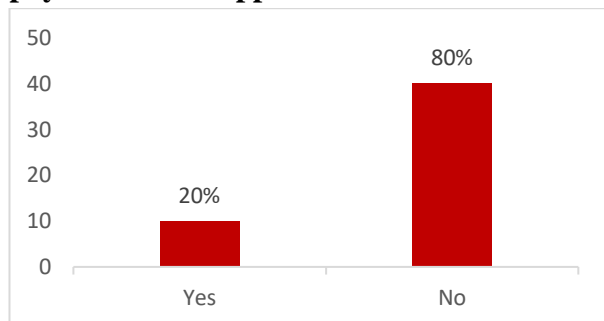
Figure 4.4: supplying of maize to FRA



The results of the study revealed that 64% respondents indicated that, they used to supply maize to food reserve agency (FRA) when the e-payment voucher system was used by the Zambian government as a farm input distribution method,

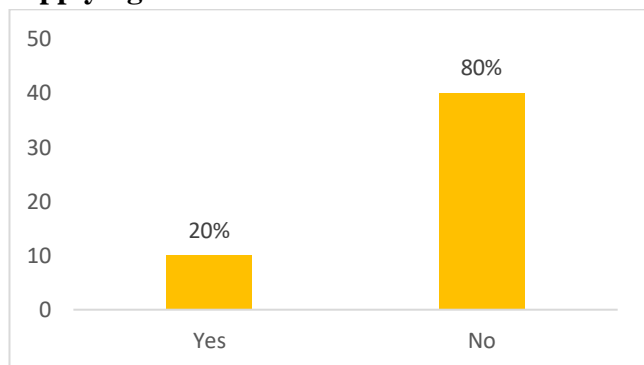
while 36% respondents indicated that they never supplied their maize to food reserve agency during the time they were using e-voucher payment system.

Figure 4.5.: Supplying maize to FRA after e-payment was stopped



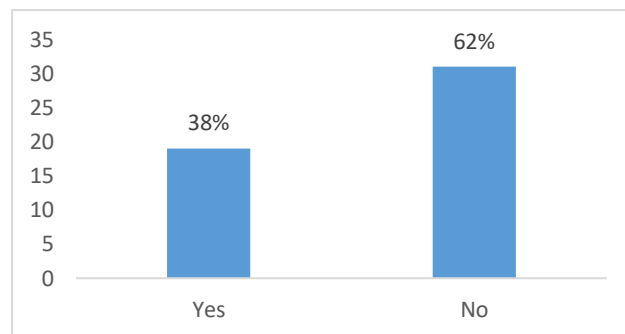
The results from the analysis revealed that 80% respondents indicated that they still continued supplying their maize products to food reserve agency (FRA), even after the e-payment voucher was stopped. However, 20% respondents indicated that they stopped supplying maize to FRA, when the e-payment voucher system was stopped.

Figure 4.6.: Withdrawal of farmers from supplying maize to FRA



The results of the study revealed that 80% respondents indicated that e-payment voucher system method did not cause them to withdraw from supplying maize products to food reserve agency (FRA). However, 20% respondents indicated that the e-voucher system caused them to withdraw from supplying FRA.

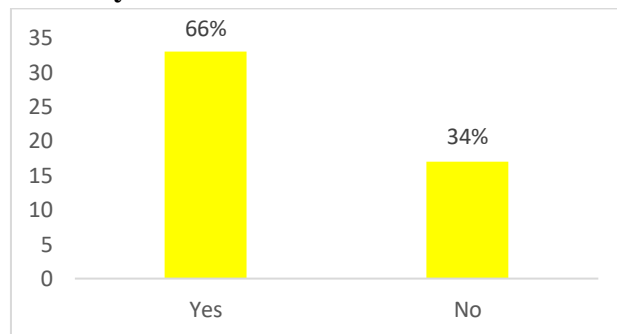
Figure 4.7.: Influence of e-payment towards supply of maize to FRA



The results of the study revealed that 62% respondents indicated that the e-payment voucher did not influence their attitude towards supplying maize to food reserve agency (FRA).

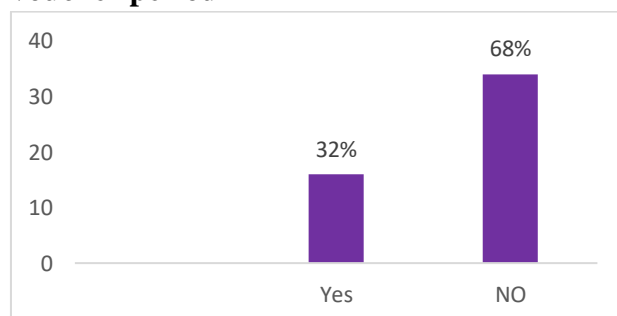
38% respondents indicated that the e-payment voucher had influenced their attitude towards supplying maize to the food reserve agency.

Figure: 4.8: Effect of e-voucher on yields in Luanshya district



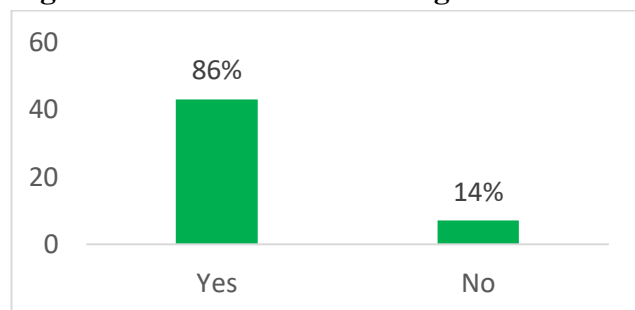
The results from the analysis showed that 66% respondents indicated that the e-payment voucher system helped to increase their farm yields, while 34% respondents opposed, and indicated that the e-voucher payment system was not helping in increasing their farm yields.

Figure 4.9.: challenges during e-payment voucher period



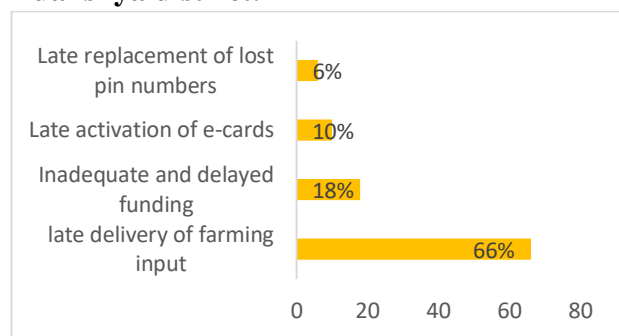
The results of the study showed that 68% respondents indicated that the e-payment voucher system was not easy to use during the time it was being used as an agricultural input distribution method by the Zambian government, while 32% respondents indicated that it was easy to use.

Figure 4.5.2: e-voucher challenges faced



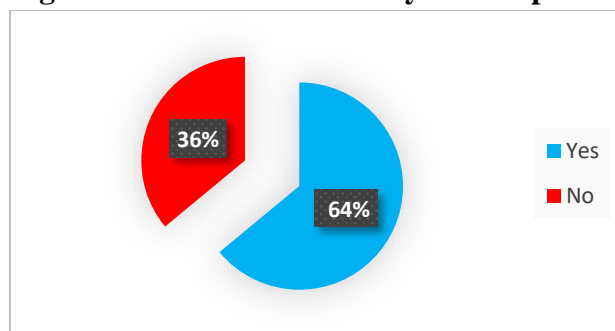
The findings of the study revealed 86% respondents indicated that they faced challenges using the e-voucher system as an input distribution method, at the time it was used, while 14% respondents indicated they did not face challenges using the e-voucher payment method.

Figure 4.10.: types of challenges faced in Luanshya district.



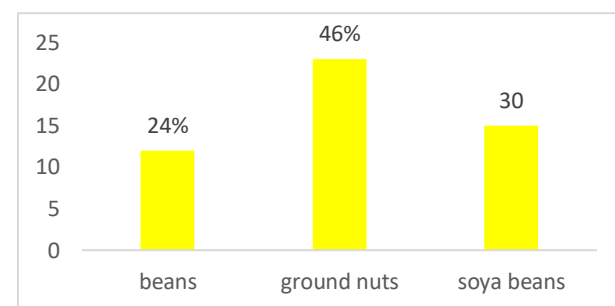
The results of the study revealed that the most challenge faced by 66% farmers when they were using the e-payment voucher system was late delivery of agricultural inputs, while 18% farmers indicated inadequate and delayed funding. On the other hand, 10% farmers indicated late activation of e-cards and 6% farmers indicated late replacement of lost pin number.

Figure 4.11.: Access to variety farm input



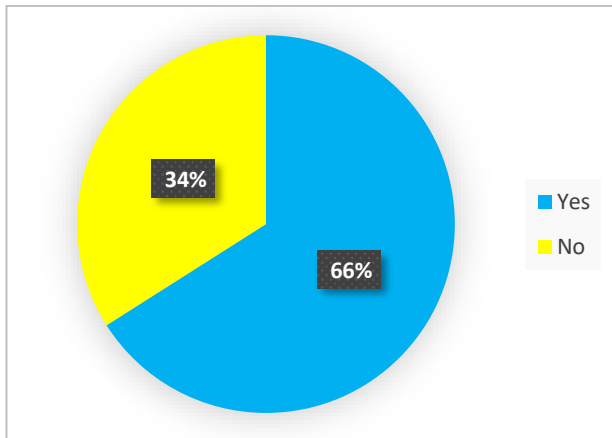
The results of the study show that 64% of farmers indicated that they had access to a variety farming inputs, only 36% farmers indicated that they did not have access to a variety to agricultural input during the time the e-payment voucher system was being used as a farm input distribution method.

Figure 4.12. Accessed farm input apart from maize



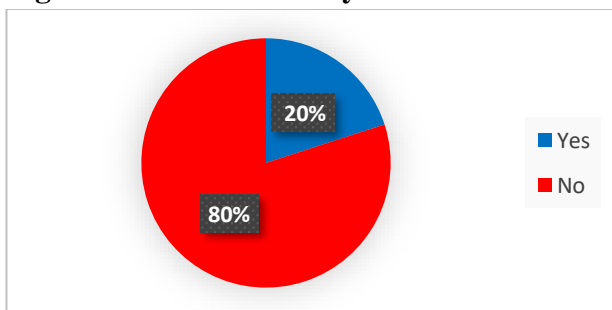
The results of the study revealed that apart from maize farm and fertilizer input that farmers used to access using the e-payment voucher system, they had access to a variety farm input using the e-voucher. The results showed that 46% respondents indicated that they have access to groundnuts apart from maize and fertilizer, while 30% respondents indicated they had access to soya beans and 24% respondents had access to beans.

Figure 4.13.: Effectiveness of e-payment voucher in Luanshya district



The result of the study showed that 66% respondents indicated that the e-payment voucher was effective in the agricultural sector in Luanshya district. While 34% respondents indicated that the e-payment voucher was not effective. Results are shown in the figure above.

Figure 4.14.: Accessibility of e-voucher



The results from the study shows that 80% respondents indicated that the e-voucher system was not easily accessed by farmers in Luanshya district. However, only 20% respondents indicated that farmers had easy access to the e-voucher payment system.

4.14. Hypothesis testing

The study tested the null hypothesis and alternative hypothesis.

H0; There is no significant relationship between the e-payment voucher in the agricultural sector and farmer’s attitudes towards supplying maize to Food Reserve Agency (FRA).

ii. Ha; There is a significant relationship between the e-payment voucher in the agricultural sector and farmer’s attitudes towards supplying maize to Food Reserve Agency (FRA).

4.15. Hypothesis testing on farmer’s attitude towards supply maize to FRA

Table 4.1 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.247 ^a	1	0.264		
Continuity Correction ^b	0.662	1	0.416		
Likelihood Ratio	1.276	1	0.259		
Fisher's Exact Test				0.366	0.209
N of Valid Cases ^b	50				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.84.

b. Computed only for a 2x2 table

Based on the Chi-square test (X²) results, the table reports that the degree of freedom to be 1, the observed P-value of 0.264 is greater than the standard P-value of 0.05. Therefore, we reject the alternative hypothesis and conclude that there is no significant association between the e-payment voucher in the agricultural sector and farmer’s attitudes towards supplying maize to Food Reserve Agency (FRA).

5) DISCUSSION/INTERPRETATION OF FINDINGS AND CONCLUSION

5.1. Discussion/Interpretation of Findings

The study's overall objective was to investigate the effect of using e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food Reserve Agency (FRA) in Luanshya district.

The first specific objective was to investigate the effect of e-voucher on farmer's maize yields. The results from the analysis showed that 66% respondents indicated that the e-payment voucher system helped in increasing their farm yields, while 34% respondents indicated that it did not. The findings were supported by (Tossou and Baylis (2018), and Alabi and Adams (2020)), whose results showed that the e-wallet scheme significantly influenced the farmer's yield positively. Therefore, despite of the failure of the e-payment voucher system, it is evident from the results, that somehow it improved the farmer's yields in Luanshya district. Hence, there is need for the government to come up with an innovative method of improving the e-payment voucher system, because it had the potential to increase the crop yield.

The second objective was to determine the challenges of e-payment voucher system faced by farmers. The findings of the study revealed that 86% respondents indicated that they faced challenges when the e-voucher was used, while 14% respondents indicated that they did not. Challenges includes; late delivery of agricultural inputs, inadequate and delayed funding, late activation of e-cards and late replacement of lost pin number. The finding of the study was supported by (Sitko. et al, 2017), according to Sitko et al, (2017), Farmers Input Support Program (FISP) faced a lot of challenges such as late delivery of inputs, distribution of standardized inputs inappropriate for all agro-ecological zones or soil types,

overcrowding the private sector, poor targeting and high treasury cost to the government of Zambia. Therefore, there is need of coming up with strategies of making the e-payment voucher system to work, because it is evident from the findings that, despite of the challenges, the e- voucher had the potential ability to the farmer's yields.

The third objective was to investigate if the e-voucher system improved farmers' access to a variety of farming inputs. The results of the study showed that 64% farmers indicated that they had access to a variety farming inputs, only 36% did not have access to a variety agricultural input. The results of the study further revealed that apart from maize and fertilizer, farmers had access to a variety of farm inputs. The results showed that 46% respondents had access to groundnuts apart from maize and fertilizer, while 30% had access to soya beans and 24% respondents had access to beans. However, (Chibbomba, 2018) revealed that inputs purchased through e-voucher were fertilizers, maize seed (21%), livestock drugs, vegetable inputs, CA implements and poultry inputs. (Musika, 2018), noted that the e-payment voucher system, promoted agricultural diversification, which is good for small scale farmers, as well as the economy of the country, in terms of income generation. Therefore, the e-payment voucher system somehow benefited the farmers in Luanshya district, regardless of its challenges.

The fourth objective was to investigate how effective the e-payment voucher system was. The results showed that 66% respondents indicated that the e-payment voucher was effective in Luanshya district. While 34% respondents indicated that the e-payment voucher was not effective. According to Lungu (2015), the FISP e-voucher system was capable of reducing cost, simplifying the operations, serving smallholders better, increasing control and accountability, enhancing security, allowing access to reports and analysis, able to

distribute funds quickly. On the other hand, it was intended to ease the problems faced by smallholder, flexibility and improve security and allow farmers to access payment services if not banked. The e-payment voucher system, was an effective method of distributing farm input, despite of the challenges it faced. It helped in mitigating some of the challenges faced by farmers before it was introduced as an input distribution method. Therefore, the Zambian government, should re-adopt the e-voucher and work on mitigating the challenges faced before.

The results from the study revealed that all the respondents indicated that their area was supported by farmers input program (FISP). This program promotes seed or input distribution to farmers. However, according to the findings fertilizer and seeds were farm inputs accessed during the e-voucher period. Results further revealed that farmers in Luanshya District belongs to various cooperative groups namely St Anthony cooperative, Levi chito, Twikatane, Ipusukilo, Mafwasa multipurpose, National association and Kanga Kampala. Cooperative groups ease the access to farm inputs for farmers. Hence, farmers in Luanshya district have benefited by being members of these various cooperative groups.

Under policy brief No. 59 of the IAPRI. The beneficiaries that were chosen by the Camp Agricultural Committee (CAC) to use the e-voucher system were the farmers with the following characteristics; a farmer who belonged a cooperative group or other farmer organization, a smallholder farmers who belonged to the region covered by the camp, a farmer who had up to 5 ha of land and who was capable of at least having 1 ha of land, a farmer that had the capacity to pay the initial payment (i.e., the farmer contribution to FISP), a farmers who had not benefited concurrently from other programs such as Food Security Pack Program and a farmer not be a

defaulter from the Food Reserve Agency (FRA) and/or any other agricultural loan program.

The results of the study revealed that 62% respondents indicated that they used to supply maize to food reserve agency (FRA) when the e-payment voucher system was used by government as a farm input distribution method, while 36% respondents indicated that they never supplied maize to FRA. On the other hand, the results from the analysis revealed that 80% respondents indicated that they still continued supplying their maize products to food reserve agency (FRA), even after the e-payment voucher was discontinued. However, 20% respondents indicated that they also stopped supplying maize to FRA when the e-payment voucher system was stopped.

It is evident from the results obtained that the e-payment voucher system had not influenced the majority farmer's decision of supplying their maize to food reserve agency (FRA), before and after it was discontinued. However, few farmers stopped supplying FRA when the e-payment voucher discontinued. The reason that must have led to farmers not to supply FRA with maize can be reduced maize yields, or due to late delivery of farm inputs when the e-voucher was used as an input distribution method, hence farmers did not have sufficient maize stocks to supply FRA. This can be supported by findings of (Kapembwa *et al*, 2015), whose findings revealed that late fertilizer delivery reduces maize yields. On the other hand, other farmers never just supplied FRA even before the e-voucher system was introduced as an input distribution method, maybe because they already had other customers for their maize product.

The results of the study revealed that 80% respondents indicated that e-payment voucher system method did not cause them to withdraw from supplying maize products to food reserve agency (FRA). However, 20% respondents indicated that the e-voucher system caused them to withdraw from supplying FRA. Therefore, there is

need to investigate the real reason to why other farmers have withdrawn from supplying their maize to food reserve agency (FRA).

The results of the study revealed that 62% respondents indicated that the e-payment voucher did not influence their attitude towards supplying maize to food reserve agency (FRA), while 38% respondents indicated that the e-payment voucher had influenced their attitude towards supplying maize to the food reserve agency. Hence, the e-voucher scheme had no effect on the majority farmer's attitude towards supplying maize to FRA. However, the results show that the e-voucher had an effect on some few farmers.

The results of the study showed that 68% respondents indicated that the e-payment voucher system was not easy to use, while 32% respondents indicated that it was easy to use. There is a possibility that there are other personal problems that farmers also faced with the e-voucher scheme. Therefore, those personal problems need to be listed as well so that if by any chance the government decides to re-adopt the scheme, they can be worked on as well. For example, (Simbilima, 2017), found that farmers were faced with many challenges such as delayed delivery of agricultural inputs, lack of financial resources to pay cooperative membership, e-voucher system rigidity, and lack of transportation to inputs and restriction of FISP inputs to the small-scale farmers.

The results from the study shows that 80% respondents indicated that the e-voucher system was not easily accessed by farmers in Luanshya district. However, only 20% respondents indicated that they had easy access to the e-voucher payment system. This can be as a result of e-cards being limited. Other members that belonged to cooperative groups did not own the e-card because there were limited. this can also be another reason to why the e-payment voucher failed.

The hypothesis was tested using Chi-Square and the results revealed that there is no significant association between the e-payment voucher and farmer's attitudes towards supplying maize to Food Reserve Agency. Hence, the e-voucher had no effect on farmer's attitude on supplying maize to FRA.

5.2. Conclusions

In conclusion, the study objective was to investigate the effect of the e-payment voucher in the agricultural sector on farmer's attitudes towards supplying maize to Food Reserve Agency (FRA). The research answered the research question, thereby fulfilling the study objective.

The e-payment voucher had an effect on farmer's maize yields in a positive way, in the sense that it had the potential to increase the farmer's yields in Luanshya district. On the other hand, it is evident that e-payment voucher also increases the farmers yields around the world. However, farmers faced some challenges using the e-payment voucher as an input distribution method. These challenges include, late delivery of agricultural inputs, delayed funding, late activation of e-cards and late replacement of lost pin number. In addition, the implantation of the e-payment voucher by the Zambian government was a challenge too. However, the e-payment voucher system improved farmers' access to a variety of farm inputs. Therefore, apart from maize seed and fertilizer, farmers also obtained groundnuts, soya beans and beans. Hence, the e-payment voucher system, promoted agricultural diversification. The e-payment voucher system was a very effective method of distributing agricultural inputs, despite of the challenges faced by the farmers in Luanshya district.

The e-payment voucher system did not influence the majority farmer's attitudes towards supplying maize to Food Reserve Agency (FRA) during and after it was discontinued as an input distribution

method according to the findings. Therefore, maybe there are other reason to why farmers have withdrawn from supplying their maize to Food Reserve Agency (FRA). Hence, the real reason needs to be known so that the Zambian government can quickly respond to this effect since the mandate of the food Reserve Agency is that, in times of food stress, the food reserve agency (FRA) needs buy, store and release stocks on the market, create a market platform for small scale farmers, achieve market price stability and food security in the country. But if this is no longer being achieved then there is need for the Zambian government to respond to this issue fast.

Statistically it has been proven that there is no association existed between the e-payment voucher in the agricultural sector and farmer's attitudes towards supplying maize to Food Reserve Agency (FRA) in Luanshya district. Therefore, there may be other reason that could be influencing farmer's attitude towards supply maize to FRA in Luanshya district and one of the reasons can be the maize purchase price set by the government through Food Reserve Agency (FRA).

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REFERENCES

- [1] Adebo, G. M. (2014). *Effectiveness of e-wallet practice in grassroots agricultural services delivery in Nigeria - a case study of Kwara state growth enhancement support scheme*. Journal of Experimental Biology and Agricultural Sciences, August - 2014; Volume – 2(4), Nigeria
- [2] Alibi, R. A.; Adams, O.O. (2020). *The impact of E-wallet fertilizer subsidy scheme and its implication on food security in Nigeria*. African economic research consortium, Nairobi PO Box 62882-City Square, Nairobi 00200, Kenya.
- [3] Banda. M.M, Changala. M, (2019). *The Use of e-voucher as an input distribution system by small scale farmers in Chongwe district, Zambia- An adult education perspective*, Journal of Adult Education vol.1 Issue 2. 15-27. Chongwe, Zambia.
- [4] Banful, A.B, (2010). *Old problems in the new solutions? Politically motivated allocation of program benefits and 'New' fertilizer subsidies*, IFPRI Discussion paper 01002, Washington D.C., IFPRI
- [5] Chibbomba, C.C. (2018). *Impact Of E-Voucher Farmer Input Support Programme (FISP) On Crop Productivity and Income Diversification Among Small Scale Farmers of Lukanda, Agricultural in Kapiri Mposhi District in Zambia*,
- [6] CUTS (2018), *Review of the Food Reserve Agency Act: Will commercializing the FRA address its inefficiencies?* CUTS, Lusaka.
- [7] Dorward, A. (2009). *Rethinking Agricultural Input Subsidy Programmes in Developing Countries*, Distorting Farm Support to Enhance Global Food Production, A. Elbehri, A. Sarris, eds., pp. 311-374, Food and Agriculture Organization of the United Nations, 2009, Rome.
- [8] Edward, G. (2013). *The impact of national agricultural input voucher scheme on rice production at the kiroka irrigation scheme*, Sokoine University of agricultural, Morogoro district, Tanzania.
- [9] Fadairo O. S, Nathaniel. S, Olutegbe, Tijani. A. M, (2015). *Attitude of crop farmers towards e-wallet platform of the Growth Enhancement Support Scheme for input delivery in Oke-Ogun area of Oyo state*, Journal of Agricultural Informatics. 2015 Vol. 6, No. 2, Nigeria.
- [10] Famakinwa, M.; Alabi, D.A.; Ola, L.A.; Adeyemo, R.A. (2017). Strengths and weaknesses of e-wallet system in agricultural input distribution among farmers in Osun state, Nigeria: Economic Engineering in Agriculture and Rural Development Vol. 17, Issue 4, 2017, Nigeria.

- [11] Fariya, A and Farida, A, 2014. *Effects of Awareness of Fertilizer Subsidy on the Yield of Crops among Rural Farmers in Ghana*. International Journal of Agricultural Science, Research and Technology in Extension and Education Systems 4(3):123-126, Ghana.
- [12] Fin Mark Trust. (2016). *Agriculture Subsidies in SADC Countries: Current Status and Impact*. Southern Africa.
- [13] Hedström, Karlsson, K, Söderström, F, (2016). *Challenges of introducing a Transforming Government: People, Process and Policy professional eID card within health care* Vol. 10 No. 1, pp.26-46, Sweden.
- [14] Hoddinott, J.; Dorosh, P.; Filipinski, M.; Rosenbach, G.; Tiburcio, E. (2020). *Food transfers, electronic food vouchers and child nutritional status among Rohingya children living in Bangladesh*, PloS one 15 (4), e0230457, 2020, Bangladesh.
- [15] IAPRI (2017). *E-voucher Performance & Recommendations for National Wide Rollout during the 2017/18 Farming Season*. Policy Brief No. 59. Zambia,
- [16] Kalinda, T.; Simfukwe, M. (2007). *Zambia input voucher study: Literature review and planning - Phase I* Food, Agriculture and Natural Resources Policy Analysis Network, 16 June 2007, Zambia
- [17] Kalinda, T.; Simfukwe, M. (2007). *Zambia input voucher study: Literature review and planning - Phase I* Food, Agriculture and Natural Resources Policy Analysis Network, 16 June 2007, Zambia
- [18] Kapembwa, T.N.; Black, R.; Jayne, T.S. (2015). *Does Late Delivery of Subsidized Fertilizer Affect Smallholder Maize Productivity and Production?* Presented at 2015 AAEA & WAEA joint annual meeting, July 26-28, San Francisco California 205288
- [19] Kasoma, A.; Nyemba, N.E.; Deka, B. (2018). *The PMRC e-voucher research report 2017/2018*, Zambia
- [20] Luanshya District Investment Profile (LDIP), 2013. *The vision of Luanshya district an industrious green town by 2030*, pp. 8, <https://www.cbt.gov.zm>. Retrieved on 10th June 2020, Zambia.
- [21] Lungu, J. T, (2015). *FISP electronic voucher system approved*. NAIS news 18th August 2015 (7), Zambia.
- [22] Macaitta, M, (2016). *Importance of agricultural sector in a country's economic development*, the guardian, Tanzania.
- [23] Marulanda, B.; Fajury, L.; Borrero, U. (2015). *Colombia's Coffee Growers Smart ID Card: Successfully Reaching Rural Communities with Digital Payment*, Latin America and the Caribbean, Colombia.
- [24] Mulozi, N. M, (2018). *Electronic voucher system: a case of Monze and Mazabuka districts in Zambia*, Satakunta University of Applied Sciences, Southern province, Zambia.
- [25] Musika, (2018). *'FISP Electronic Voucher Programme to Promote Diversification'*. Lusaka, pp. 0-15.
- [26] Nagasawa, T, (2017). *The effect of Farmers Field School on inputs investment through electronic voucher (e-Voucher) scheme*. A case study in 4 provinces of Central Mozambique- Development Economics Group (DEC), Wageningen University, Mozambique.
- [27] Roshin, K.; Deepthy, T. (2016). *Effectiveness of E-Payment in Agricultural Sector with Special Reference to Kannur District*, IOSR Journal of Business and Management (IOSR-JBM), e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 18, Issue 3. Ver. I (Mar. 2016), PP 27-35, India.
- [28] Sharma, A.; Choudhary, S.; Swarnakar, V.K. (2013). *A study on impact of Kisan Credit Card scheme among the beneficiary farmers in Sehore district of Madhya Pradesh*: International Journal of Science and Research 2 (1), 154157, 2013, India.
- [29] Siame, M.; Lichilo, I, Siame, N, 2017. *An Assessment of FISP e-voucher Performance*, Business and economic model for Zambia's economic and social development, Vol 6 Issue 7, Mulungushi University Kabwe, Zambia.
- [30] Simbilima, A, (2017). *Farmers input support program (FISP) and its implication on food security among small scale farmers*, Ten Miles Area, Chibombo, Lusaka.
- [31] Tossou, D.A.; Baylis, K. (2018) *Does Flexibility in Agricultural Input Subsidy Programs Improve Smallholder Crop Yields and Household Food Security? Evidence from Zambia*. Paper presented at the 2018 Annual meeting, August 5-7, Washington, D.C. 274243, USA.
- [32] UNDP (2016). *Zambia Human Development Report 2016*, UN House, Alick Nkhata Road, PO. Box 31966, Lusaka 10101, Zambia.