# Applied Research Frontiers

## Effects of Social Media on Rice Marketing Innovation System in Fufore Local Government Area, Adamawa State, Nigeria

Madugu A. J.

*Department of Agricultural Economics and Extension, Adamawa State University, Mubi, Nigeria.*

**\*Corresponding author E-mail address**: madjustinealt@gmail.com

**Abstract:** The study was conducted to investigate the effect of social media on rice marketing innovation system in Fufore Local Government Area of Adamawa State, Nigeria. Data collected were analyzed using regression analysis. The result of Double Log Regression showed the goodness of fit correctness of the specified assumption of the composite error. Results revealed that the use of twitter was positively insignificant on the effectiveness of marketers in the study area. Facebook was positively and statistically significant at 1% level while YouTube and WhatsApp were each positively and statistically significant at 5% level of significance. The result further revealed that social media play a pivotal role in dissemination of latest information and advertisement with minimal cost. It was thus concluded that Facebook is the most effective social media tool in the study area followed by YouTube and WhatsApp respectively. Social media is a dynamic tool and therefore it is essential that the respondents should continue to look for new opportunities and anticipate potential problems. All actors should develop and encourage rice marketing association so that they can have easy access to new information and innovations in order to improve their rice marketing. It is in this regard that individuals, government and non-governmental organization are highly recommended to encourage and educate rice marketers to adopt social media as tools for marketing strategies.

**Keywords:** Social media; Effects; Innovation system; Social media platforms

## 1. Introduction

Over the years, the performance of agricultural sector has continued to be relatively disappointing as observed in the marked decline of productivity in Nigerian agriculture which is attributed to lack of innovation, farmers limited access to resources and poor infrastructure among others (Ikwuakam and Lawal, 2015; World Bank, 2008; Amaza and Maurice, 2005).[1-3] This low performance of the agricultural sector has been viewed as a system problem which is prevalent within the research-extension -farmer-input system. Agricultural innovation systems are a set of agents that jointly and/or individually contribute to the development, diffusion and use of agriculture-related new technologies which directly or indirectly influences the process of technological change in agriculture by improving its performance and productivity (Tugrul and Ajit, 2002).[4]

Social media is increasingly recognized by enterprises as an essential and efficient marketing network to connect with existing and prospective consumers (Barau and Afrad, 2017).[5] The implementation of social media is no longer a strategic business alternative but a necessity with an enormous prospect compared to traditional and ancient styles. Social media marketing is beginning to have a tremendous impact on business growth with its performance taking place at a global level. Social media does not only facilitate the process of connecting businesses from producers to consumers and

nurturing their relationship but also gives the user a dynamic role of managing those processes (Saravanan and Suchiradipta, 2017; Afolabi J.A, 2009).[6,7]

Rice marketing encompasses all the undertakings involved in moving rice from the point of production to where it is needed by the final consumers in the desired form, at the appropriate time and place (Bassey et al., 2013).[8] Agricultural marketing plays an important role in stimulating production, consumption and in accelerating economic development. Social media helps in developing business strategies like advertisement and latest updates on rice marketing. The most common platforms include Facebook, WhatsApp, Instagram and Twitter, Which give an opportunity for businesses to grab the attention of rice consumers while simultaneously building a brand image. The networks allow businesses to use different tactics to build and produce a brand profile like fan pages, contests, etc. Through social media marketing, one can figure out likes and preferences of consumers as well as the latest trends adopted by the public. It further helps a company/brand to build a strong online presence by innovative social media marketing technique and consumer satisfaction (Rao and Reddy, 2012).[9]

Rice is an important food item and it forms the main part of the diet of over one third of the world's population. It is one of the most valued cereal crops of West Africa and has become increasingly used

as a constituent of animal feed. Rice is rich in carbohydrate, the outside layer of rice grain which is removed during polishing is known as rice bran, it is rich in protein and vitamins and is widely used in the formulation of poultry feed (Akinyo, 1991).[10] One of the most important issues in agricultural development economics is supply response of crops (Mushtaq and Dawson, 2002).[11] It is reported that the world's stock of stored rice grain has been falling relative to each year's use because consumption surpasses production (Roy et al., 2011).[12]

The marketing innovation system of fufore LGA is more like a close one where majority (72%) of rice producers are also marketers who primarily produce and sell within their locality (Abubakar, 2019),[13] this suggests an inadequate market outlet and eventually a poor market value for their produce. It is against this background that this paper intends to determine the effects of the use of social media platforms on rice market performance in the study area.

## 2. Materials and Methods

### 2.1. Study Area

This study was conducted in Fufore Local Government Area located in Agricultural Development Programme (ADP) Agricultural zone 3 of Adamawa State, it lies between latitudes 80°45' N and 120°15' E of the equator and longitudes 90°35' N and 130°15' E of the Greenwich meridian with a total landmass of about 3,666 square kilometers and a total population of 207,287 out of which 105,784 are males and 101, 503 are females. It also has a growth rate of about 3.5% (NPC 2006).[14] The area is bounded to the north by Song and Maiha LGAs, to the east by the Republic of Cameroon, to the south by Jada and Mayo-Belwa LGAs, and to the west by Yola South and Girei LGAs of Adamawa State. It has eleven wards (Beti, Farang, Fufore, Gurin, Karlahi, Mayoine, Pariya, Ribadu, Uki-Tuki, Wuro Bokki and Yadim) and two forest Reserves: Gurin Forest Reserve, gazetted on 6th September 1962 with an area of 165.95 square kilometers and Karlahi forest reserve gazetted on 2nd December 1965 with an area of 104.44 square kilometers. Rainfall starts in April, it progresses and reaches its peak in August and ends in October. Average annual rainfall ranges between 998 mm and 1,262 mm while annual average temperature ranges from 30°C to 42°C (Adebayo et al, 2020; Ray, 2007).[15,16] Agriculture is the major occupation of the area with rice as the main crop cultivated, thus making both rain- fed and irrigated rice farming a major livelihood others include fish farming and rearing of livestock.

### 2.2. Data Collection and Sampling Procedure

The data were mainly collected via primary source. A structured questionnaire was used to obtain information on marketer's socio-economic characteristics; interaction among actors, access to extension services, possession of android phones, social media platforms installed, social media platforms used in marketing, types of market information received and transferred via social media, membership in marketer association, as well as constraints to the innovation process were collected.

One hundred (100) questionnaires were distributed (this was because a pilot survey indicated that most of the marketers in the

**Table 1.** Sampling Frame.

| S/NO. | Wards | Sample frame | Sample 10 % |
|-------|-------|--------------|-------------|
| 1 | Dasin | 404 | = 40.4 ≈40 |
| 2 | Gurin | 270 | =27 |
| 3 | Ribadu | 138 | = 13.8 ≈14 |
| 4 | Fufore | 150 | =15 |
| **Total** | | 962 | =96.2≈ 96 |

*Source: field survey, 2019*

area were also producers, but this study was mainly concerned with marketers only, thus the reason for the number of questionnaires distributed) but only eighty two (82) responses were returned. Purposive and multi-stage simple random sampling techniques were employed for this study. In stage one, four wards were purposely selected out of the eleven wards because they are located along the Benue valley flood plains and thus identified as the major rice producing and marketing area in the local government. In stage two, there was a purposive selection of two communities from each ward making a total of eight communities, Stage three involved a simple random selection of ninety six respondents (96 rice marketers using social media) from the eight communities in proportion to market sampling frame (Table 1). Stage four involved the purposive selection of four (4) key informants: two (2) extension service providers (ADP) of Fufore LGA and two (2) from Adamawa state ministry of agriculture (MOA) who disseminate agricultural information using social media, This finally brings the sample to a total of 100, however, only eighty two (82) questionnaires were finally retrieved, therefore achieving 82% response rate.

### 2.3. Analytical Techniques

In determining the effect of the social media on rice marketing innovation system Regressions Analysis was used.

The model is given as: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \ldots\ldots b_nX_n + U_i$. Four functional forms will be tested which are: Linear, semi log, Exponential and double log models.

Where;

Y= Marketing effectiveness

a = Constant

b = Coefficients

F= Function

$X_1$ = Twitter (%)

$X_2$ = YouTube (%)

$X_3$= WhatsApp (%)

$X_4$= Facebook (%)

Criteria used for selecting the lead equation conformed to the apriori expected economic criteria for the signs of coefficients, significance and size of coefficients of multiple determinations $R^2$ as well as F and t- ratios. WhatsApp, Facebook and YouTube were expected to be positive and thus positively affect the performance of rice marketing innovation system of the study area.

### 2.4. Research Hypothesis

$H_o$: Social media has no effect on rice marketing innovation system; this was analyzed using t-test statistics: The general formula for the T-test is given as:

*Appl. Res. Front., 2023, 2(4), 23-26.*

24

Ariviyal
Publishing

**Table 2.** Estimated parameters of the double Log Regression of rice production in the study area.

| Production | Parameters | B | Std. Error | Coefficients | T. ratio |
|---|---|---|---|---|---|
| (Constant) | $\beta_0$ | 1.344 | .059 | | .000 |
| Twitter | $X_1$ | .075 | .065 | .113 | 1.159* |
| YouTube | $X_2$ | .092 | .045 | .155 | 2.042** |
| WhatsApp | $X_3$ | .107 | .045 | .179 | 2.000** |
| Facebook | $X_4$ | .350 | .067 | .544 | 5.193** |

*Source: field survey 2019. * =1% positively insignificant and **= 5% positively significant*

$$\frac{(X_1 - X_2)}{\sqrt{\frac{(S_1)^2 - (S_2)^2}{n_1 - n_2}}}$$

Where: T= t-value

$X_1$ = the mean sample of rice marketers before the project

$X_2$ = the mean sample of rice marketers after the project

$S_1{}^2$ = sample standard deviation for the rice marketers before the project

$S_2{}^2$ = sample standard deviation for the rice marketers after the project

$n_1$ = sample size of rice marketers before the project

$n_2$ = sample size of rice marketers after the project

Rule of thumb: when the T- calculated is greater than the t-tabulated we reject the null hypothesis and accept the alternate hypothesis and conclude that there is significant difference between the two population parameters.

## 3. Results and Discussions

Table 2 revealed that the Double Log Regression was found to show the goodness of fit correctness of the specified assumption of the composite error, it revealed that the use of Twitter was positive but statistically insignificant on the effectiveness of marketers in the study area, this may be due to the fact that majority of the marketers in the innovation system do not manage Twitter accounts, they may be able to download the app on their android phones but the survey showed that most of them do not have the capacity to operate twitter accounts. This outcome may also be as a result of inadequate network and electricity. The result is not in agreement with the findings of Abah *et al.,* (2015)[17] who stated that rice market is price efficient and is not integrated; this could be as a result of transportation bottlenecks, poor marketing information and lack of scientific grading/standardization of produce leading to prizes not referring to equivalent grades across the markets in the innovation system. YouTube variable was positive and statistically significant at 5% implying that consumers can see whatever they want to buy and the equivalent price at any point in time. This finding is in harmony with Aral *et al.,* (2013)[18] who pointed out that social media have revolutionized the ways organizations relate to the market place and society, thus creating a new world of possibilities and challenges in all aspects of the enterprise, from marketing and operations to finance and human resource management. The positive sign suggests that (all things being equal), the higher the use of YouTube the higher the effectiveness of marketing, the higher the profit except where there is over use of it which will consequently lead to decrease in market performance.

**Table 3.** Results of Hypothesis Testing

| Variables | Mean | Std. Error | T-ratio |
|---|---|---|---|
| Twitter (X1) | 1.8140 | .20203 | 1.540 |
| YouTube (X2) | 3.8372 | .63905 | 6.005* |
| WhatsApp (X3) | 4.3151 | .67938 | 6.352* |
| Facebook (X4) | 10.8453 | .69639 | 15.574* |

*Source: field survey 2019 * =1%*

WhatsApp was positive and statistically significant at 5% level; this conforms to the priori expectation. It implies that, the use of WhatsApp in rice marketing increases the effectiveness of marketing; it helps to maximize profit and minimize cost in terms of advertisement/awareness creation. Furthermore, Facebook was found to be statistically significant and positive at 1% level, meaning that, the more the use of Facebook, the more the supply of vital market information which subsequently leads to increase in the effectiveness of the marketing system. This is due to the fact that it gives users new ideas/capabilities to act and interact in ways that are difficult to operate offline. This study outcome is in agreement with that of Kainga and Adeyemo (2012)[19] who observed that social media are tools that can be used to improve connections and knowledge related to marketing effectiveness and competencies. This outcome clearly shows that Facebook is the most effective social media tool in the study area at 1% significant level, this is followed by YouTube and WhatsApp at 5% levels respectively.

### 3.1. Hypothesis Testing

Table 3 reveals the T-test result of the hypothesis which states that Social media has no effect on rice marketing innovation system. The result in the table further revealed that YouTube (X2), WhatsApp (X3) and Facebook (X4) were all positive and statistically significant at 1% level while Twitter (X1) was statistically insignificant. This suggests that the use of social media has a highly significant effect on rice marketing innovation system. Therefore, the null hypothesis is rejected while the alternative hypothesis is accepted. This finding is in line with that of Ohajianya and Onyenweaku (2003)[20] who opined that using social media in rice marketing in Ebonyi State is highly effective.

## 4. Conclusions

The study found out that, social media has a significant effect on rice marketing innovation system in the study area despite the problems faced in rice marketing in the innovation system such as lack of electricity, poor information and communications technology ICT facilities and network ties in connecting to social media etc. There is thus a need for public private partnership (PPP) in the provision of ICT facilities and electricity so that actors in rice marketing innovation system can have access to the use of social media in rice marketing. This is paramount looking at the revenue being generated via the innovation system. It was thus concluded that Facebook was the most effective social media tool in the study area at 1% significant level, this is followed by YouTube and WhatsApp at 5% levels respectively.

The study recommends that government/private individuals should focus on providing basic infrastructure such as access roads;

Arivyal Publishing

*Appl. Res. Front., 2023, 2(4), 23-26.*

25

such infrastructure has immense potentials to facilitate and improve rice marketing efficiency in the innovation system. The study further recommends that all actors should be encouraged to form various rice marketing associations so that they can have easy access to new information and innovations to improve their rice marketing efficiency in the system and that the study be expanded to north eastern Nigeria for it to be generalized. Finally, the study suggests that capacity building in terms of skills and knowledge of the stakeholders in rice marketing innovation system should be improved through seminars, conferences, workshops and agricultural training programs by NGOs and Philanthropies; this will go a long way to increase rice marketing efficiency in the innovation system.

## Conflicts of Interest

The authors declare no conflict of interest.

## References

1   Ikwuakam O.T.; Lawal M. Sesame Farmers' Access to Intervention Input in Batsari Local Government Area of Katsina State, Nigeria. *Nigerian Journal of Rural Extension and Development,* 2015, **9**. [Link]

2   World Bank. The Growth Report: "Strategies for Sustained Growth and Inclusive Development" Commission on Growth and Development, the International Bank for Reconstruction and Development/ the World Bank, Washington DC, 2008. [Link]

3   Amaza P.S.; Maurice D.C. Identification of Factors that Influence Technical Efficiency in Rice-based Production Systems in Nigeria. *Rice Policy and Food Security in sub-Saharan Africa*, 2005, 70-81. [Link]

4   Tugrul T.; Ajit M. The Cotton Supply Chain in Azerbaijan. *ISNAR, The Hague, Netherlands*, 2002, 13-17.

5   Barau A.A.; Afrad M.S.I. An Overview of Social Media Use in Agricultural Extension Service Delivery. *Journal of Agricultural Informatics*, 2017, **8**. [CrossRef]

6   Saravanan R.; Suchiradipta B. Social Media for Agricultural Extension, National Institute of Agricultural Extension Management (MANAGE), Bulletin No. 1, March 2017. [Link]

7   Afolabi J.A. An Assessment of Gari Marketing in South-Western Nigeria. *J. Soc. Sci.*, 2009, **21**, 33-38. [CrossRef]

8   Bassey N.E.; Okon U.E.; Ibok O.W. Intermarket Performance and Pricing Efficiency of Imported Rice Marketing in South-South Nigeria: The Case of Akwa Ibom State Traders. *Agric. Sci.*, 2013, **1**, 53-63. [Link]

9   Rao D.V.S.; Reddy S.B.P. Agricultural Marketing, Lecture Notes Course No; AECO341, 2012. [Link]

10  Akinyo S. Socio Economic Characteristics of Rice Marketers in Yanagoa Local Government Area of Bayelsa State, Nigeria. *World J. Young Researchers*, 1991, **2**, 22-31.

11  Mushtaq K.; Dawson P.J. Acreage Response in Pakistan: A Co-integration Approach. *Agric. Econ.*, 2002, **27**, 111-121. [CrossRef]

12  Roy P.; Orikasa T.; Okadome H.; Nakamura N.; Shiina T. Processing Conditions, Rice Properties, Health and Environment. *Int. J. Environ. Res. Public Health*, 2011, **8**, 1957-1976. [CrossRef]

13  Abubakar S. Social media: A New Market Outlet. An Unpublished MSc Dissertation, Submitted to the Department of Agricultural Economics and Extension, Adamawa State University, Mubi, Nigeria. 2020.

14  NPC: National Population Commission. National Population Census. Federal Republic of Nigeria Official Gazette, 2006, 94, Lagos, Nigeria.

15  Adebayo A.A.; Tukur A.L.; Zemba A.A. Adamawa State in Maps. Paraclete Publishers, Yola, Nigeria. 2020.

16  Ray H.H. The Effects of Physical Techniques on Soil Conservation in Mubi and Environs Adamawata State, Nigeria. *Sustainable Development in Agriculture and Environment*, 2007, **3**, 112-121.

17  Abah D.A.; Anjeinu A.G.; Iorhon P.A. Analysis of the Performance of Paddy Rice Marketing in Benue State, Nigeria. *J. Agric. Sci. Eng.*, 2015, **1**, 143-152. [Link]

18  Aral S.; Dellarocas C.; Godes D. Introduction to the Special Issue—Social Media and Business Transformation: A Framework for Research. *Information Systems Research*, 2013, **24**, 3-13. [CrossRef]

19  KAINGA P.E.; ADEYEMO A.O. Socio-Economic Characteristics of Fish Marketers in Yenagoa Local Government Area of Bayelsa State, Nigeria. *Age*, 2011, **15**, 26-30. [Link]

20  Ohajianya D.O.; Onyenweaku C.E. Analysis of Costs and Returns in Rice Farming by Farm Size in Ebonyi State. *Journal of Agriculture and Social Research (JASR)*, 2003, **3**, 29-39. [CrossRef]

*Appl. Res. Front., 2023, 2(4), 23-26.*

26