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Adoption of E-Marketing Channels of Rice: A Case of Rice Marketers in Ebonyi State

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ABSTRACT

Agriculture is the mainstay of Nigeria's economic development and the produce of this agriculture goes beyond the traditional ways of getting the produce to reach a wide range of consumers. E-marketing provides a veritable platform to reach a wide range of consumers in a very efficient and faster way. The study analysed the adoption of e-marketing channels for rice in Ebonyi State, Nigeria. The specific objectives were to describe the socio-economic features of the rice marketers, to determine the adoption level of e-marketing channels of rice, and to determine the factors affecting the level of adoption of e-marketing channels of rice. Primary data were collected through the use of well-structured questionnaires from 60 respondents who were selected through multistage, purposive and random sampling techniques. 60 data were analysed using descriptive statistics, adoption index, and econometric tools. The results of the socio-economic features of the respondents showed that most of them were young in their active years, with a mean age of 40. Years, mostly males, mostly married, with an average household size of 6 persons per household, have a mean marketing experience of 13 years and a mean education of 11 years. The results of the level of adoption showed an adoption level of 0.68. The factors affecting the level of adoption of e-marketing channels showed that the semi-log function was chosen as the lead equation with the coefficient of multiple determinations, R^2 of 0.533. variables such as level of education ($p > 0.01$), cost of internet data ($p > 0.01$), network availability (0.05), marketing experience ($p > 0.05$) and number of times used e-marketing (0.01) were significant factors that determine the level of adoption of e-marketing channels. It is recommended that educating rice marketers on the usefulness of e-marketing to promote their business and stakeholders in telecommunication industries should promote rice marketers through a reduction in the cost of data and improve internet accessibility and reception.

1. Introduction

Agriculture is the backbone of Nigeria. More than 60% of Nigerian workers are involved in Agriculture, it is surprising that Nigeria is lagging in establishing an e-commerce infrastructure that would contribute to economic development and the transformation of traditional agricultural markets to a more progressive market-oriented agricultural sector. In other words, Agriculture refers to cultivating land and breeding animals and plants to provide food, fibre, medicinal plants and other products to nurture and upgrade life. The significant growth in Internet use and technology has necessitated its use in many businesses, including agriculture (Brown and Baer, 2006) commented that despite the advantages associated with the Internet for communicating with customers, providing information regarding their products, and selling over the Web, little is known regarding how agricultural service professionals perceive the use of technology in marketing. Nowadays, the internet has

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become a growing means of communication and information dissemination, many users of Facebook, WhatsApp, Twitter and other social media platforms as means of displaying and marketing their wares to the general public and this has become an effective business tool (International Telecommunication Union, ITU, 2017).In this modern age, E-marketing provides firms with the ability to reach new customers and old customers in new, efficient and faster ways. In the same vein, e-marketing also allows firms to tap new and old suppliers through new and innovative channels. These possibilities have raised the expectations of improved efficiency and substantial cost savings (Saban, and Timalsina 2016).

It is becoming increasingly clear that Ebonyi State is acquiring a national and international reputation for producing rice. This reputation is founded upon the availability of a superb natural setting of a rain-fed upland environment especially on the Abakaliki lands of South-Eastern Nigeria (Mbam, 2014). However, of all rice-producing towns in Ebonyi State, E-marketing of rice has been limited because of a lack of awareness and practice of e-commerce in Ebonyi State. Limited studies have analyzed the adoption of e-marketing channels for rice in Ebonyi State, thereby leaving an information gap that the study will be designed to fill. Despite several studies on rice production in Nigeria, very little is known about the awareness of e-marketing of rice by rice farmers in Ebonyi State.

E-marketing channels would have become one of the most embracing trends in Nigeria's Agribusiness sector due to the high influx of internet users. However, the high cost of accessing internet services has restrained many rice farmers who would have used e-marketing to get their products to the general public. Secondly, due to the high illiteracy level among rice farmers in Ebonyi State, most of them have no computer knowledge and awareness thereby restricting their usage of internet services to enable them to display their products on the web. In addition to this, most buyers prefer cash payment due to their mistrust of online shopping as a result of the growing trend of internet fraudsters who developed online marketing platforms to scam innocent customers. There's also this challenge of non-internet security and strong internet security, sometimes rice farmers may enter fake websites or fake online portals. This may lead to a waste of time and input.

To resolve this daunting task facing rice farmers in Ebonyi State, the research will tend to address the following objectives

Objective of the Study

i. To describe the socio-economic features of the rice marketers in the study area,
ii. To determine the adoption level of the e-marketing channel of rice in the area,
iii. To determine the factors affecting the level of adoption of e-marketing channels of rice farmers in the study area,

2. Materials and Methods

This study was conducted in Ebonyi State, South East Nigeria. The state has 13 local Government Areas and 3 Agricultural zones namely Ebonyi North, Ebonyi Central and Ebonyi South. The state has a land mass of approximately 5,932 km^2 and lies within latitudes 4^0N and 14^0N of the Equator and Longitudes 3^0E and 15^0E of Green which is meridian.

The state has a population of about 2.8 million people (National Population Commission,(NPC) 2013), an average rainfall of 1200mm-2000mm with temperature ranging from 33^0 in the dry season and 16^0 to 18^0 in the rainy season (Ebonyi Agricultural Development Programme,(EBADEP), Annual Record, 2005). Rice farming is predominantly practised by farmers in the state. The multi-stage sampling technique, purposive and random sampling techniques was adopted for this study. In the first stage, the Abakaliki and Ohaozara Local Government Area was purposively selected because of the high concentration of rice farming activities in the area. In the second stage, two (2) communities were randomly selected from each of the two local government areas selected, making a total of four (4) communities. In the third stage, three (3) villages were randomly selected from the four (4) communities making it a total of twelve (12) villages.

In the final stage, five (5) rice farmers were selected randomly from the list of registered rice farmers in the 12 villages giving every farmer an equal chance to be selected, making a total of 60 rice farmers. Hence the 60 rice farmers formed the sample size for this study. Descriptive statistics like percentage and frequency table were used to describe the socio-economic characteristics of the rice farmers in the study area, The Adoption Index model was used to determine the adoption level of e-marketing channels in the study area. A six (6) by fourteen (14) matrix was designed which showed the number of e-marketing channels the respondents participated in and the total number of marketing channels in the study area. A score will be assigned at different stages of participation. The model is specified as follows:

$$AI = \frac{\text{number of e-marketing channel the respondent participated in}}{\text{total number of marketing channels in the area}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

Decision rule

If Adoption Index (AI) > 0.5 partially adopted e-marketing channel,
If Adoption Index (AI) < 0.5 not adopted e-marketing channel and

If Adoption Index (AI) = 1, full adoption
If Adoption Index (AI) = 0, not aware of e-marketing channel

Ordinary Least Square multiple regression techniques were used to determine the factors affecting the level of adoption of e-marketing channels in the study area.

The model is specified as:
$Y = f(X_1, X_2, X_3, X_4, \ldots X_n)$ ……3.2
Where Y = proxy for Adoption Index.

$$Y = \frac{\text{number of e-marketing channel the respondent participated in}}{\text{total number of marketing channels in the area}} \quad \ldots\ldots 3.3$$

X_1 = Age (years)
X_2 = Level of education (years)
X_3 = Cost of internet data (₦)
X_4 = Years of internet usage (years)
X_5 =Quantity sold online (bags)
X_6 = Network availability (Full network = 1, Otherwise = 0)
X_7 = Marketing Experience (years)
X_8 = Estimated profit (₦)
X_9 = Number of times used e-marketing
E_i = Error Term
The functional forms that will be fitted are Linear, Semi-log, Double log and Exponential.

3. Results and Discussion

3.1 Socio-economic characteristics of the marketers
Socio-economic characteristics of the farmers are presented in Table 1

Table 1 Socio-economics characteristics of the farmers

Variables	Frequency	Percentage
Age		
20 – 39	30	50
40 – 59	28	46.7
60 – 79	2	3.3
Total	60	100
Mean	40	
Gender		
Male	32	53.3
Female	28	46.7
Total	60	
Marital status		
Married	54	90
Single	5	8.3
Others	1	1.7
Total	60	100
Household size		
0 – 4	16	26.7
5 – 9	41	68.3
10 – 14	3	5
Total	60	100
Mean	6	
Marketing experience		
0 – 5	4	6.7
6 – 11	25	41.7
12 – 17	18	30
18 – 23	13	21.7
Total	60	100
Mean	13	

Level of education	10	16.7
0 – 6	30	50
7 – 13	20	33.3
14 – 20	100	100
Total	11	
Mean		

Source: Field Survey Data, 2021

Table 1 shows that the mean age of the marketers is 40 years. This implies that the rice marketers were very young and active, capable of undertaking all the activities associated with rice marketing in the study area. However, their ages also have an impact on the adoption of e-marketing channels. This agreed with the findings of Adepoju (2018), that age is an integral consideration in the adoption of e-marketing.

The Table further showed that the greater percentage of marketers in the study area were male. This implies that rice marketing was male dominated. This could be attributed to the weights of rice in bags which may be too heavy for the women. This finding does not agree with the findings of Anthony and Anyalor, (2019) who reported that the percentage of women is higher than male in the marketing and production of locally produced rice in Abakiliki in Ebonyi State, Nigeria.

The table also showed that 90% of the rice marketers were married, 8.3% of the rice marketers were single and 1.7% of the rice marketers were either widows or widowers. This is an indication that rice marketers in the study area were mostly married. This result is in tandem with the findings of Anthony and Anyalor (2019).

Furthermore, Table 1 also indicates that the mean household size of the rice marketers was approximately 6 persons per household. Household size may affect the consumption of the marketers. Marketers with large household sizes, spend more of their profit on consumption thereby affecting their savings. This finding agreed with the finding of Nwahia, O.C., (2020), which reported that the average household size in Ebonyi farming households is 6 persons per household.

In addition, the Table shows the mean marketing experience of the rice marketers was 13 years of marketing experience. This implies that the marketers were well experienced in the knowledge of rice marketing, having spent up to 13 years marketing rice in the study area. Experience is an integral factor that helps marketers to handle marketing risk.

Finally, Table 1 shows that the mean years the rice marketers spent in school was 11 years. This showed that the majority of the marketers had a secondary school level of education; the result implies that the majority of the marketers were literate enough to understand marketing rudiments to improve their income. This agrees with the result of Anthony and Anyalor (2019).

3.2 Adoption level of e-marketing

The level of adoption of e-marketing channels were estimates using adoption index

$$Y = \frac{\text{number of e-marketing channel the respondent participated in}}{\text{total number of marketing channels in the area}}$$

Number of e-marketing channel the respondent participated were 9

Total number of marketing channels in the study area were 14

$$\text{Adoption index} = \frac{9.57}{14}$$

Adoption index = 0.68

The result shows that rice marketers partially adopted e-marketing channels in the study area. This implies that the marketers were unwilling to embrace full participation in e-marketing Channel of rice.

Table 2 Determinants of factors affecting level of adoption

Explanatory variable	Linear function	Exponential function	+ Semi-log function	Double-log function
Constant	-35.780	2.675	-389.981	-3.057
	(-0.941)	(4.518)***	-(1.811)*	(1.054)
Age	-0.343	-0.004	-14.272	0.861
	-(0.441)	-(0.340)	-(0.232)	(1.048)
Level of education	2.994	0.049	47.103	0.485
	(1.671)*	(1.691)*	(1.725)*	(1.793)*
Cost of internet data	0.013	1.001	24.878	0.329
	(1.762)*	(1.947)*	(1.506)*	(1.171)

Year of internet usage	-1.090	0.013	-12.065	0.013
Online sales	-(0.193)	(0.146)	-(0.324)	(0.024)
	0.030	0.002	-15.595	-0.142
Network availability	(0.214)	(0.966)	-(1.299)	-(0.839)
	7.520	-0.223	8.562	-0.341
Marketing experience	(0.447)	-(0.850)	(2.431)**	(-0.431)
	4.495	0.048	73.932	0.284
Estimated profit	(3.557)***	(2.457)**	(2.776)**	(0.798)
	-1.926E-5	-3.078E-7	6.178	-0.033
No of times used	-(0.195)	-(0.202)	(0.476)	-(0.193)
internet	0.414	0.004	21.399	0.212
	(2.325)**	(1.521)*	(1.776)*	(1.307)
R^2	0.441	0.397	0.533	0.429
Adj. R^2	0.341	0.285	0.363	0.212
F-ratio	4.385***	3.443***	3.138***	1.974*

*Source: Field Survey Data, 2021. Values in parenthesis are t-ratio, * = significant at 10%, ** = significant at 5%, *** = significant at 1% and + = lead equation.*

Table 2 showed that the semi-log functional form provided the lead equation based on having the highest value of the coefficient of multiple determinations (R^2), the highest numbers of significant variables, the highest F-value and conformity with a priori expectations.

The value of the coefficient of multiple determinations (R^2) was 0.533, which implies that 53.3% of the variation of factors affecting the adoption level of the e-marketing channel in the study area was accounted for by the explanatory variables in the model. Variables such as level of education, cost of internet data, network availability, marketing experience, and number of times used e-marketing channel were significant at 5%, 10% and 1% respectively, while variables such as age, year of internet usage, values of online sales, and income were not significant at any level respectively. The coefficient of the level of education was significant at ten per cent and positively related to factors affecting the adoption level of e-marketing channels in the study area. This implies that the level of education positively affects adoption. Marketers who are educated and understand marketing strategies to attract large volumes of transactions using e-marketing channels to remain in the business,

The coefficient of cost of internet data was significant at 10% per cent and was positively related to factors affecting adoption of e-marketing channel. This implies that any increase in cost of internet data, the level of adoption will decrease but if otherwise, the adoption level of the e-marketing channel will increase. The coefficient of network availability was significant at five per cent and positively related to factors affecting the adoption of e-marketing channels. This implies that good network reception increases the adoption of e-marketing channels in the study area as rice marketers will take advantage of all the marketing opportunities and platforms to make their products visible to the entire online communities.

The coefficient of marketing experience was significant at five per cent and positively related to factors affecting the adoption of e-marketing channels. This implies that experience is a veritable tool for additional sales through the use of internet facilities to build a large network of communities who may not be able to come to the physical market to buy but can order their rice through the use of an e-marketing channel.

The coefficient of the number of times used e-marketing was significant at ten per cent and positively related to factors affecting the adoption of e-marketing. This implies that the number of times e-marketing is used determines the extent of awareness created for rice in the global market in the study area.

4. Conclusion

The study focused on the adoption of e-marketing channels for rice. A case study in Ebonyi State Nigeria. The study showed that most of the rice marketers were within the economically active age with appropriate educational attainment, married, mostly male and were well experienced in rice marketing. It was also seen that the marketers partially adopted e-marketing channels of rice in the study area. The results of the factors affecting level of adoption of e-marketing channels showed that semi-log function was chosen as the lead equation. The significant determinants of level of adoption of e-marketing channels were level of education, cost of internet data, network availability, marketing experience and number of times used e-marketing in the study area.

5. References

Brown, C., and Baer, A. (2006). An examination of the use of e-marketing by small farms in the North East. *Journal of Food Distribution Research*, *37*(1), 40–47.

National Bureau Of Statistics. (2012). *Annual statistical yearbook, Nigeria*. Retrieved from http:// www.nigerianstat.gov.ng

National Population Commission (NPC) (2013). Population figure. Federal Republic of Nigeria. Retrieved from http://www.npc.gov

Saban, K.K.C. and A.K. Timalsina (2016) Challenges for Adopting E-Commerce in Agriculture in Nepalese Context — a Case Study of Kathmandu Valley. *Kathford International College of Engineering and Management, Tribhuvan University, Nepal*. *Proceedings of IOE Graduate Conference, 2016 pp. 305–312*

Nwahia, O.C., (2020). Analysis of the Cost and Economic Return in Rice Production I Ebonyi State, Nigeria. Indonesian Journal of Agricultural Research, vol 3(3), pg 205 – 2014.

Adepoju, A.A. (2018). Investigating Endogeneity Effect of Agricultural Commercialization on Household Poverty Status in Oyo State, Nigeria. International Journal of Agriculture Innovation and Research, &(1), 93 – 100.

Anthony, C.N and Anyalor, M. (2019). Marketing Analysis of Locally Produced Rice in Abakiliki Local Government Area of Ebonyi State, Nigeria. Mediterrean Journal of Social Sciences, vol 10(1), 1 – 9.

(EADEP), Ebonyi Agricultural Development Programme, Annual Report, 2005.

Mbam, P. (2014): Chairman of Rice Mills Owners Industrial Enterprise: How many millers operate at Abakaliki Rice Milling Cluster Agro Business. [Online] Available: News, http://agronigeria.com/2014:

International Telecommunication Union (ITU). (2017). Internet world Statistics. Retrieved from http://www.internetlivestats.com/internet-users/.