

Table egg marketing amid COVID -19 pandemic in Ibadan southwest local government area of Oyo State

Odukoya SO ¹, Sodeeq AE ^{2,*} and Adewole, AO ³

¹ Department of Animal Production, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan.

² Department of Agribusiness Management, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan.

³ Department of Agricultural Extension and Management, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan.

Abstract

The study was conducted to evaluate table egg marketing amid COVID -19 pandemic in Ibadan South-West local government area of Oyo state. Multi-stage random sampling method was used in selecting egg marketers. Using a well-structured questionnaire, data were obtained and subjected to descriptive statistics, gross margin and regression analysis. The result obtained shows that the mean age of the egg marketers was 33 years. Majorities were female and Christians. Most were Yoruba people, married, with tertiary education. Large number of the respondents adopted COVID -19 measures such as hand cleaning regularly, cough or sneeze in the bent elbow, use of nose mask, avoid contact with eyes, nose and mouth. The estimated gross margin value was N16, 300.00 while the regression result showed that price of egg purchase ($p<0.01$) and transport cost ($p<0.05$) during COVID -19 pandemic had significant effect on egg marketing. It was also observed that COVID -19 measure index (CMI) and transportation negatively affected egg marketing. It is therefore recommended that the government should provide appropriate palliative to reduce the effect of COVID -19 pandemic on egg marketers.

Keywords: Table Egg; Marketer; Coronavirus Disease; Profitability; Ibadan Southwest Local Government Area; Oyo State

1. Introduction

In late December 2019, COVID -19, commonly known as the Coronavirus was identified in China as the main cause of recent human respiratory health cases. The virus was first detected in the Wuhan City, and in a space of months, it had covered the entire globe [1]. The virus has engendered huge drastic changes to world healthcare, economic, transportation, education, agricultural and livestock production systems around the world. The World Health Organization on 30 January 2020 declared the virus an emergence [2]. The Coronaviruses are potentially single-stranded enveloped viruses with an RNA that measures about 26 to 32kb [3]. All Coronaviruses that infect humans are zoonotic, with bats being a primary reservoir for most of them [4]. The 21st century has witnessed the incidences of three Coronavirus outbreaks, with the latest being the Coronavirus disease of 2019, also known as the COVID -19. The outbreak of the Severe Acute Respiratory Syndrome Coronavirus (SARS-COV) in 2003 resulted in 8096 cases globally with 774 deaths, while the Middle East Respiratory Syndrome Coronavirus (MERS-COV) resulted in 2500 cases with 860 deaths [5]. On the backdrop of the above phenomenon, the emergence of a new Coronavirus disease has raised great Public Health concerns and may prove to have scathing global socioeconomic consequences in the long run. Countries fighting individually and collectively to defeat what could be regarded as one of the greatest challenges, that

* Corresponding author: Sodeeq AE

Department of Agribusiness Management, Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan.

has ever confronted mankind. It has revolted against social, economic, religious, political, cultural and academic gathering, among others. The pandemic has fought both powerful and non-powerful countries. It has also killed both the wealthy and the poor masses in significant numbers to the abashment and worry of the rich and poor nations.

Therefore, at the onset of this COVID -19 pandemic, the World Health Organization, regional and local health bodies adopted measures necessary to limit the spread of the disease, and has also tasked the public and the leadership of various countries to enforce the measures such as social distancing, regular hand washing, lockdown and closing of borders. In Nigeria, President Muhammadu Buhari in two successive broadcasts to the nation ordered a lockdown, restriction of human and vehicular movements across the country especially in places such as Abuja, Lagos and Ogun State [6, 7]. The World Health Organization (WHO), globally and regionally, have concluded that the COVID -19 pandemic may not end anytime soon and urged countries and governments across the world to safely reopen their economies without putting citizens, especially the vulnerable age groups to COVID -19.

Poultry products (meat and eggs) marketed in most developing countries especially in Africa remains quite expensive, with their marketing system being informal and poorly developed [8]. Table egg marketing commence from farms where farmers sort and grade the eggs in trays and crates and from where egg assemblers pay and take delivery of their purchases to owned or rented stalls. [9] observed that the eggs are packaged in crates of 30 pieces and sold to middlemen (retailers and wholesalers) and some other consumers especially households, fast food centers' and schools. The chicken eggs also find wide uses in eateries, bakeries where they are good food ingredients for cakes and rolls. The demand for Chicken eggs in Nigeria is high and have positively correlated with periods of religious festivals such as Ramadan and Christmas when demand for eggs are highest [9]. [10] had noted that protein intake in foods by Nigerians was below universal recommendation. They noted that persons in urban areas in Nigeria took an average of 28 grammes of animal protein per caput per day, with those in rural areas taking an average of 17 grammes of protein per caput per day. These are below the Food and Agriculture Organization (FAO) recommended 35 grammes of animal protein intake per caput per day [11]. Children and persons with acute protein deficiency in their diets are expected to buy more and consume more chicken eggs and by doing so shift more income to table egg marketing sellers.

Notwithstanding how people have been convinced to buy more chicken products, the income from table egg marketing sales have been highly unequal amongst table egg marketers as it is skewed in favour high scale traders. The effects of COVID -19 on table egg marketing are still largely unquantified and yet to be fully felt. Formal assessments have not yet been possible, but current observations reveal disruptions to livestock value chains. Lessons from past epidemics indicate these disruptions are likely to grow, along with their dire, socio-economic consequences. Fortunately, actions can be taken to protect this sector and its activities, services and products upon which the world relies. COVID -19 has affected all the processes which connect farm production to final consumer. Moreover, it seems to strike the food production system and food value chain. The negative impact of the pandemic on supply and demand for food might lead to food insecurity [12]. Most of the countries have taken measures such as home confinement, travel bans and business closure to control the rate of infection. Such travel restriction has affected every stages of food supply chain with major impact on food distribution. Meanwhile, amid the partial lockdown of the country, economic activities at the macro and micro levels have been grounded while social activities are also halted. The objective of this study was therefore, to evaluate table egg marketing amid COVID -19 pandemic in the southwest local government of Oyo state.

2. Methodology

Ibadan Southwest is a local government area in Oyo State, Nigeria with its headquarters at Oluyole Estate in Ibadan. It covers 40km² area of land with a population of 7,840,864 as at the 2016 census. Popular area or district includes Ring road, Oke-Ado, Oke-Bola Gege, Bornphoto and Isale Osi. Primary data were collected through administration of a well-structured questionnaire. A multistage random sampling method was used in selecting egg marketers. Data collected from 135 table egg marketers out of the 200 questionnaires distributed were used for analysis. This is due to inaccuracy, mistakes and non-coordination of the respondents while filling the questionnaires, and as thus may affect the output of this study.

2.1. Analytical Techniques

The descriptive statistics such as mean, frequency and percentage were employed to describe the socioeconomic factors e.g. age, sex, educational level etc of the respondents and how it affects their egg marketing. Estimation of cost and returns was carried out using gross margin analysis measured as the difference between the gross output or revenue and the variable cost of each enterprise. It is given as:

$$GM = TVS - TVC$$

Where:

GM = Gross Margin

TVS = Total Value of Sales (₦)

TVC = Total Variable Cost (₦)

2.2. Regression Model

Regression model was used to analyze the effect of coronavirus on profitability of table egg marketers in the study area. This model was explicitly expressed as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \dots \dots b_7X_7 + \mu$$

Where Y is the dependent variable, X_1 - X_8 are independent variables and μ is the error term

Y = Gross margin (₦)

b = Coefficient

X_1 = Age (years)

X_2 = Sex

X_3 = Education

X_4 = Household size

X_5 = Purchase (₦)

X_6 = Transport cost (₦)

X_7 = Labour cost (₦)

X_8 = CMI

3. Results and Discussion

3.1. Sociodemographic characteristics of the table egg marketers

Result in Table 1 revealed that the largest proportion (44.4%) of the egg marketers were within the age group 21-30, 20.9% were within 31-40 and 0.7% were above 60 years of age. Female dominated with 65.2% while 34.8% were male. On their religion, 56.3% were Christians, 41.5% were Muslims and only 2.2% were traditional. Majority (88.1%) were Yorubas, 8.9% were Igbos and 3.0% were Hausas. Most of the respondents (48.9%) in the study area were married. More than half of the respondents had tertiary education (57%), followed by secondary education (31.1%) and no formal education (3%). Sixty-six percent had a household size between 1-5, 32.7% had between 6-10 and those with household greater than 10 were very few (1.4%).

3.2. COVID -19 measures taken by the respondents in the study area:

Table 2 indicated that majority of the respondents (94.8%) underwent hand cleaning regularly. Only 5.2% reported not did so. The respondents adopted the measures of cough or sneeze in the bent elbow as well as avoid contact with the eyes, nose and mouth (87.4%). Nose mask (85.2%) was used regularly and social gatherings were greatly avoided (91.9%). Avoiding close contact with sick people had 94.1% while 80.0% of the marketers were frequently disinfecting touched objects cum avoiding handshake throughout the day (77.8%).

Table 1 Sociodemographic characteristics of table egg marketers

Variable	Frequency	Percentage%
Age (years)		
≤20	14	10.4
21-30	60	44.4
31-40	28	20.9
41-50	22	16.2
51-60	10	7.4
>60	1	0.7
Mean age	33 years	
Sex		
Male	47	34.8
Female	88	65.2
Religion		
Christianity	76	56.3
Islam	56	41.5
Traditional	3	2.2
Ethnicity		
Hausa	4	3.0
Igbo	12	8.9
Yoruba	119	88.1
Others	0	0
Marital status		
Single	58	43.0
Married	66	48.9
Divorced	6	4.4
Widowed	2	1.5
Separated	3	2.2
Educational level		
No formal education	4	3.0
Primary education	12	8.9
Secondary education	42	31.1
Tertiary education	77	57.0
Household size		
1-5	89	65.9
6-10	44	32.7
>10	2	1.4
Mean Household Size	5	

Source: Field Survey, 2020

Table 2 COVID -19 measures taken by the respondents

Variable	YES		NO		RANK
	Frequency	%	Frequency	%	
Hand cleaning regularly	128	94.8	7	5.2	1 ST
Cough or sneeze in the bent elbow	118	87.4	17	12.6	4 TH
Avoid contact with the eyes, nose and mouth	118	87.4	17	12.6	4 TH
The use of nose mask	115	85.2	20	14.8	5 TH
Limitation of social gathering	124	91.9	11	8.1	3 RD
Avoid close contact with sick person	127	94.1	8	5.9	2 ND
Disinfecting frequently touched objects	108	80.0	27	20.0	6 TH
Avoiding handshake throughout the day	105	77.8	30	22.2	7 TH

Source: Field Survey, 2020

3.3. Cost and returns of the egg marketing by the respondents

Table 3 revealed that average quantity of one hundred crates of eggs cost ₦120000 were marketed. The cost of one hundred empty crates was ₦10000, cost of labour ₦ 1000, cost of transportation ₦200, cost of rent ₦1000, tax ₦500, miscellaneous expenses ₦1000. All these give a total variable cost (TVC) of ₦133,700 and total revenue of ₦150,000.00. A total of ₦16,300 was estimated for the gross margin. The gross margin for the egg marketing was calculated as sales returns on egg (total revenue) minus total variable cost (TVC).

Table 3 Cost and returns of respondents on egg marketing per week

Variable	Quantity	Price per unit (₦)	Value(₦)
Purchase of eggs (crates)	100	1200	120000
Purchase of crates	100	100	10000
Cost of labour	2	500	1000
Cost of transportation		200	200
Cost of rent		1000	1000
Tax		500	500
Miscellaneous expenses		1000	1000
Total Variable Cost (TVC)		4500	133700
Sales return on egg (TR)	100	1500	150000
Gross margin (TR-TVC)			16300

Source: Field Survey, 2020

3.4. The regression result of the effect of COVID -19 on table egg marketing

Age, education, household size and purchase had positive effect on egg marketing; this is shown by their positive signs in the result shown in table 4. Age and education might seriously aid marketing strategy during COVID 19 pandemic. Large quantity of egg purchased correlates with the marketing size while large household size might be an advantage to increase marketing outlets. Meanwhile, sex, transport, labour and COVID -19 measures index had negative effects on the egg marketing.

Table 4 Regression result on the effect of COVID -19 on table egg marketing in the study area

Model		Unstd. Coefficients		Std. Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-20.221	10.447		-10.534	0.141
	AGELOG	0.599	0.495	0.166	10.209	0.241
	SEXLOG	-0.272	0.375	-0.085	-0.725	0.477
	EDULOG	10.345	0.897	0.165	10.499	0.150
	HHSLOG	0.052	0.321	0.021	0.162	0.873
	PURCHASELOG	10.229	0.196	10.003	60.268	0.000
	TRANSPORTLOG	-0.301	0.130	-0.311	-20.320	0.032
	LABLOG	-0.147	0.204	-0.119	-0.719	0.481
	CMILOG	-0.093	10.033	-0.013	-0.090	0.929

a. Dependent Variable: GMLOG; $R^2 = 0.827$; Adjusted $R^2 = 0.77$

4. Conclusion

The study shows that there was adverse effect of COVID -19 on profitability of table egg marketing in the study area. The preventive measures taken by the egg marketers and their customers aided in curbing the spread of the disease. The study also confirmed that respondents in the study area were not able to make huge profit but were having a moderate rate of sales during the pandemic period. Based on the results obtained from this study, it is therefore recommended that online stores, marketing and home delivery services should be adopted by the marketers. Societal infrastructure should be improved for a good marketing distribution channel. Also, appropriate palliatives should be provided by the government to reduce the effect of COVID 19 pandemic on egg marketers.

Compliance with ethical standards

Acknowledgments

The actor acknowledged the cooperation of table egg marketers in Ibadan South West Local Government Area of Oyo State during data collection for this study.

Disclosure of conflict of interest

The authors declared that there is no conflict of interest on this article.

References

- [1] Hengbo Zhu, Li Wei and Ping Niu. The novel coronavirus outbreak in Wuhan. China Global Health Research and Policy. 2020; 5:6 <https://doi.org/10.1186/s41256-020-00135-6>
- [2] World Health Organization. Middle East respiratory syndrome coronavirus (MERS-CoV)-The Kingdom of Saudi Arabia. 2020.
- [3] Ren LL, Wang YM, Wu ZQ, Xiang ZC, Guo L. Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. Chinese Medical Journal. 2020; 133(9): 1015-1024.
- [4] Dixon PB, Lee B, Muehlenbeck T, Rimmer MT, Rose AZ, Verikios G. Effects on the U.S. of an H1N1 epidemic: analysis with a quarterly CGE model, Journal of Homeland Security and Emergency Management. 2010; 7(1): 75.
- [5] Fouchier RA. Pause on avian flu transmission research. Science. 2012; 335: 400-401.
- [6] Punch. Buhari locks down Lagos, Ogun, Abuja, cases reach 111. 30 march, 2020. <https://punching.com/buhari-locks-down-lagos-ogun-abuja-cases-reach-111>.

- [7] Amzat et al. Coronavirus outbreak in nigeria: burden and socio-medical response during the first 100 days. *Int J Infec Dis.* 2020, 98: 218-224
- [8] Alemayehu Oljira. Review of the socioeconomic importance of village poultry production in Ethiopia. *LWATI: Journal of contemporary research*, 16(1),156-173, 2019.
- [9] Ogbonna S.I and Emerole, C.O. Analysis of income and profitability of chicken egg marketing business in abia state, Nigeria. *Scientific papers series management, economic engineering in agriculture and rural development.* 18(3), 2018.
- [10] Yusuf SA, Malomo O. Technical Efficiency of Poultry Egg Production in Ogun Ogun State, Nigeria: An Envelopment Analysis (DEA) Approach. *International Journal of Poultry Science.* 2007; 6(9): 122 –129, 622-629.
- [11] Akanni IA. Effect of Microfinance on Small Scale Poultry Business in South Western Nigeria. *Emirate Journal of Food and Agriculture.* 2007; 19(2): 38 - 47.
- [12] Siche R. What is the impact of COVID 19 disease on agriculture? In *Scientiaagropecuaria.* 2020; 11(1): 3-6.