

Profitability of Palm Oil Marketing in Southeast Nigeria: The Intervening Role of Information and Communication Technology (ICT)

Nzeocha C.C¹, E.E Umehali¹, C.A Isibor¹, A.M. Okeke²

¹Department of Agricultural Economics, Nnamdi Azikiwe University, Awka,
Anambra State, Nigeria

²Department of Agribusiness, Joseph Sarwuan Tarka University,
Makurdi, Benue State, Nigeria

*Corresponding author: nzeochachinwendu@gmail.com

D.O.I: [10.56201/ijaes.v10.no4.2024.pg10.18](https://doi.org/10.56201/ijaes.v10.no4.2024.pg10.18)

Abstract

The actual impact of ICT facilities on the profitability of palm oil marketing remains inadequately understood. Thus, this study investigated the intervening role of ICT on the profitability of palm oil marketing in Southeast Nigeria. Data for this study were collected from 360 palm oil marketers from 30 markets of three randomly selected states of Southeast Nigeria using multistage sampling technique. The collected data were analyzed using descriptive statistics and budgetary techniques. The result on ICT facilities available for marketing of palm oil revealed that majority of the palm oil marketers in Abia (83.33%), Imo (78.35%) and Anambra (55.0%) used social media marketing platform in the marketing of palm oil in the study area. The findings on the cost and return in the use of ICT in the marketing of palm oil revealed that the cost of purchases constituted the highest percentage (21.84%) of the total variable. Cost of palm oil marketing in the study area followed by cost of labour (16.12%), cost of transportation (13.78%) and the least, cost of packaging (1.90%). The return on investment (ROI) realized by the marketers of palm oil using ICT to aid the business was ₦0.65 implying that for every ₦1 invested in palm oil marketing in Southeast, a return of ₦0.65 was realized. Evidence from the findings shows that palm oil marketing with the use of ICT facilities is a profitable enterprise in Southeast Nigeria. It was recommended that marketers awareness on how usage of ICT facilities could improve their marketing returns should be intensified through enlightens campagna and that marketers utilization of ICT facilities for marketing palm oil should be intensified through training to acquire requisite skills in using these facilities.

Key words: Profitability; Palm oil; Marketing; ICT; South-East; Nigeria

Introduction

The palm oil industry in Southeast Nigeria plays a crucial role in the region's economy, providing livelihoods for numerous individuals and contributing significantly to agricultural output (Nwalieji and Ojike, 2018; Okolo, Okolo, Nnadi, Obikwelu, Obalum, and Igwe, 2019). However, despite its economic importance, the sector faces various challenges that hinder its optimal performance and profitability. One of the key challenges is the inefficiency in marketing practices, exacerbated by limited access to market information and the underutilization of modern technologies. Tiku and Bullem (2015) identified inefficiency that exists in the production system for palm oil processing as the principal factor responsible for the decline in the performance of the country's palm oil sector. Similarly, Worlu *et al.* (2023) in a study on palm oil marketing in Rivers State, Nigeria revealed poor access to market price information as one of the key constraints to palm oil marketing in the country.

Traditional methods of palm oil marketing in Southeast Nigeria often involve reliance on informal networks, outdated communication channels, and inefficient distribution systems (Ezealaji, 2012). Studies such as Nwankwo and Nwosu (2018), and Okidim *et al.* (2018) showed that this results in inefficiencies such as high transaction costs, information asymmetry, and limited market reach, ultimately impacting the profitability of stakeholders along the palm oil value chain.

Moreover, the rapid advancement of Information and Communication Technology (ICT) presents both opportunities and challenges for the palm oil industry in Southeast Nigeria. While ICT tools and platforms offer the potential to revolutionize marketing practices, enhance market access, and improve decision-making processes (Ogunleye, Adebayo, and Adeboye, 2022), the adoption and integration of these technologies remain uneven and inadequate across the sector (Ahi, Sinkovics, Shildibekov, Sinkovics and Mehandjiev 2022; Ayim, Sennuga, Banidele, Bankole and Omolayo, 2023).

Thus, there is a pressing need to investigate the extent to which ICT interventions can address the existing challenges and improve the profitability of palm oil marketing in Southeast Nigeria. Specifically, there is a lack of comprehensive research that systematically examines the availability, accessibility, and utilization of ICT facilities relevant to palm oil marketing in the region. Furthermore, there is limited empirical evidence on the cost-effectiveness and returns on investment associated with the adoption of ICT in palm oil marketing activities as available studies reviewed such as Onwubuya *et al.* (2012); Ada-Okungbowo *et al.* (2013); Abdulrahman *et al.* (2017); Adeniyi and Yekinni (2018); Anyanwu *et al.* (2020); Nwafor *et al.* (2020); Vasa and Trendov (2020); Aina *et al.* (2021); Ayeni *et al.* (2023) and many others focused on the production and marketing of palm oil, and the use of ICT in agricultural produce marketing.

Therefore, this study seeks to address these gaps by investigating the profitability of palm oil marketing in Southeast Nigeria, with a specific focus on the intervening role of ICT. By examining the availability of ICT facilities and assessing the cost and returns of ICT adoption in palm oil marketing, this research aims to provide valuable insights into the potential benefits of leveraging ICT solutions to enhance the economic viability and sustainability of the palm oil industry in Southeast Nigeria.

Methodology

The Study Area

The study was conducted in the South-eastern zone of Nigeria. According to National population commission (NPC) (2007), the population of the Southeast zone is 16,381,729 persons, disaggregated into 8,306,306 males and 8,075,423 females. The region lies in the humid tropical agro-ecological zone of Nigeria, within latitudes 04° 24'N to 07° 00'N and longitudes 05° 34'E to 09° 24'E. The humid tropical ecology is characterized by two distinct seasons, namely, the dry season, which starts from November to late March and the rainy season, which starts from April to October. The general vegetation consists of woodland savannah in the northern part of the zone and mangrove forests in the deep Niger Delta area (Onyeneke and Madukwe, 2010 as cited by Onyeneke, Nwajiuba, Emenekwe, Nwajiuba, Onyeneke and Ohalete 2019)

The Southeast region of Nigeria comprises of five states namely: Abia Anambra, Enugu, Ebonyi, and Imo State. The inhabitants of this zone are predominantly farmers, producing mainly food crops like rice, cassava, yam, and maize as well as cash crop like oil palm.

Population of the Study

The population of the study consisted of 3642 registered palm oil marketers obtained in 2023 from the Palm oil Marketers Association in the Southeast geopolitical zone of Nigeria

Sample Size and Sampling Techniques

A sample size of 360 palm oil marketers determined using Taro Yamane's method was used for the study. A multistage involving purposive and random sampling technique was used to select the 360 palm oil marketers. The first stage involved the random selection of three States (Abia, Imo and Anambra) out of the five States that makes up the Southeast geopolitical zone of Nigeria. In the second stage, five local government areas (LGAs) were randomly selected from each of the three States selected in the first stage to arrive at 15 LGAs. The third stage involved purposive selection of two rural market from each of the 15 LGAs earlier selected making a total of 30 markets. The selection was based on observable evidence of the existence of good numbers of palm oil marketers. In the fourth stage, random sampling method was employed to select 12 palm oil marketers from each of the 30 markets selected to arrive at a total of 360 respondents for the study. The data for the study were collected using structured questionnaire.

Analytical Technique

The data collected were analyzed using descriptive statistics such as percentages and frequency distribution and budgetary technique specifically the return on investment (ROI). The descriptive statistics were used to describe the ICT facilities available in the marketing of palm oil while ROI was used to determine the costs and returns of palm oil marketing following the usage of ICT.

The ROI was specified as follows

$$ROI = \frac{TR - TVC}{TVC} \dots\dots\dots (1)$$

Where:

ROI= return on investment (Naira)

TR= total revenue (Naira)

TVC= total variable cost (Naira)

Results and Discussion

ICT Facilities Available for Marketing of Palm Oil

The ICT facilities available for marketing palm oil in the study area are presented in Table 1. Analysis of the results in Table 1 shows that majority of the palm oil marketers in Abia (83.33%), Imo (78.33%) and Anambra (55.0%) used social media marketing platform in the marketing of palm oil in the area. The dominance of social media marketing could be attributed to the fact that it enables marketers to have a more reliable and faster means of sending information and greater ability to keep track of consignments in transit and on arrival at the market. Zodidi (2022) observed that social media platforms have become the new farmers’ market as it allows for direct transactions between farmers and consumers.

Table 1: ICT Facilities available for marketing of palm oil in the study area (n= 360)

Items	Abia		Imo		Anambra		Southeast	
	Freq*	Percent	Freq*	percent	Freq*	Percent	Freq*	Percent
Social media								
Marketing	50	83.33	47	78.33	33	55.00	45	73.89
E-commerce platforms	5	8.33	8	13.33	11	18.33	8	13.33
Customer relationship management (CRM) software	5	8.33	9	15.00	8	13.33	7	12.22
Supply chain management	2	3.33	5	8.33	8	13.33	5	8.33

Software								
Mobile applications	3	5.00	7	11.67	5	8.33	5	8.33
Data analytics tools	3	5.00	6	10.00	11	18.33	13	11.11
Phone calls	6	10.00	10	16.67	13	21.67	10	16.11

Source: Field survey data, 2023. *Multiple response recorded

Costs and returns in the use of ICT in Marketing palm oil

The output of data analysis on costs and returns in the usage of ICT for the marketing of palm oil is presented in Table 2 and Table 3. The result in Table 2 shows that the marketers on the average spent total variable costs (TVCs) of ₦ 681963.03, ₦ 670959.43 and ₦ 652,794.13 to realize total revenues (TRs) of ₦ 1,018,880.60, ₦1, 090,217.80 and ₦ 1,101,672.51 for the marketing of palm oil in Abia, Imo and Anambra States respectively.

Table 2: Estimated profitability of palm oil marketing

Variables	Abia	%	Imo	%	Anambra	%
	Mean (₦)	TVC	Mean (₦)	TVC	Mean (₦)	TVC
Total revenue (TR)	1,018,880.60		1,090,217.80		1,101,672.51	
Variable Cost (VC)						
Labour	102,841.20	16.62	100,680.30	15.01	109,588.50	16.79
Storage	67,443.39	10.90	56,043.39	8.35	74,843.39	11.47
Purchase cost	142,764.30	23.07	131,364.30	19.58	150,164.30	23.00
Rent	47,848.50	7.73	36,448.50	5.43	55,248.50	8.46
Packaging cost	13,631.94	2.20	2,231.94	0.33	21,031.94	3.22
Transportation	92,295.00	14.91	90,562.50	13.50	84,924.00	13.01
Energy (electricity, Fuel, kerosene)	9,922.50	1.60	24,979.50	3.72	13,230.00	2.03
Market levy	89,775.00	14.50	78,375.00	11.68	97,175.00	14.89
ICT related expenses	52,441.20	8.47	150,274.00	22.40	46,588.50	7.14

Total variable cost	618,963.03	100.00	670,959.43	100.00	652,794.13	100.00
ROI	0.65		0.62		0.69	

Source: Field survey data, 2023

Table 3: Cost and return of usage of ICT in the marketing of Palm oil in Southeast Nigeria

Variable	Palm oil	
	mean(₦)	% of TVC
Total revenue (TR)	1,070,257.01	
Variable cost (VC)		
Labour	104,370.38	16.12
Storage	66,110.00	10.21
Purchases	141,431.42	21.84
Rent	46,515.03	7.18
Packaging	12,298.71	1.90
Transport	89,261.30	3.78
Power supply	16,044.04	2.48
Levy	88,441.91	13.66
ICT related expend.	83,091.24	12.83
Total Variable Cost (TVC)	647,572.01	100.00
Gross Margin (GM)	0.65	

Source: Field survey data, 2023

The cost of purchases/ stock constituted the highest percentage (21.84%) of the TVC of palm oil marketing in the area, followed by cost of labour (16.12%), cost of transport (13.78%) and the least, cost of packaging (1.90%). This implies that for a palm oil marketer to make more profit, measures must be taken to minimize TVC especially cost of stocking the product and labour.

The ROI were 0.65, 0.62, and 0.69 for Abia, Imo, and Anambra State respectively. This implies that for every ₦1 invested in palm oil marketing, a return of ₦0.65, ₦0.62, and ₦0.69 were realized

by these marketers in Abia, Imo, and Anambra State respectively. For Southeast, the ROI realized by the marketers of palm oil using ICT to aid the business was ₦0.65 implying that for every ₦1 invested in palm oil marketing in Southeast, a return of ₦0.65 was realized. Going by this result, palm oil marketing with the usage of ICT by the marketers across the selected States and the study area is a profitable enterprise. This finding agrees with Ada-Okungbowa *et al.* (2013) and Ugbajah and Anajemb (2018) who reported in their separate studies that palm oil marketing is a profitable business.

Conclusion and Policy Implications

Evidence from the findings shows that socio media marketing dominates the ICT facilities used by marketers of palm oil in the study, this could be attributed to socio media marketing enabling the marketers to send information faster and keep track of consignments on transit and on arrival at the market. The findings also shows that palm oil marketing with the use of ICT facilities is a profitable enterprise in Southeast Nigeria with a refund on investment of ₦0.65

Based on the findings of the study, the following were recommendation

- i. The marketer's utilization of ICT facilities for marketing palm oil should be intensified by the government and other stakeholders in the palm oil industry through training targeted at ensuring these marketers acquire the requisite skills in using these facilities for their marketing activities.
- ii. The marketer's awareness on how usage of ICT facilities could improve their marketing return s should be intensified by the government and other relevant stakeholders in the palm oil industry through enlightening campaign utilizing state extension services, forth-based organizations and the marketers association.

References

- Ada-Okungbowa, C.I., Ogborodi, O., Omofunwa, E.I. (2013). Profitability of palm oil marketing in Ethiope East L.G.A. of Delta state, Nigeria. *J. Applied Sci. Agricu.* 8(4): 342-345.
- Abdulrahman, S., Abubakar, M.C., Suleiman, H.A., Mohammed, M. & Idris, J. (2017). Application of ICT in Agriculture: Opportunities and Challenges in Developing Countries. *International Journal of Computer Science and Mathematical Theory*, 3(1): 8-18.
- Adeniyi, R. T. & Yekinni, O. T. (2018). Use of Information and Communication Technology for Agricultural Marketing Information by farmers in Oyo state, Nigeria. *International Journal of Agriculture and Development Studies*: 3(2): 2-20.
- Ahi, I.A., Sinkovics, N., Shildibekov, Y., Sinkovics, R.R. and Mehandjiev, N. (2022). Advanced technologies and international business: A multidisciplinary analysis of the literature. *International Business Review*, 31(4); 101967, doi: <https://doi.org/10.1016/j.ibusrev.2021.101967>.

- Aina OS, Odegbade OO, Yakubu SA, Dada OA and Sangodare AO (2021). Analysis of palm oil value chain in Ondo state, Nigeria. *International Journal of Agricultural Economics, Extension and Rural Development* ISSN: 2716-7969 Vol. 7(1), pp. 173-178
- Anyanwu, U.G., Osuji, E.E. & Ben-Chendo, N.G. (2020). Profitability Determinants of Palm Oil Marketing in Umuahia Agricultural Zone of Abia State, Nigeria. *Finance & Economics Review*, 2(3), 25-32. Doi: <https://doi.org/10.38157/finance-economics-review.v2i3.174>
- Ayim, C., Kassahun, A., Addison, C. *et al.* Adoption of ICT innovations in the agriculture sector in Africa: a review of the literature. *Agric & Food Secur* 11, 22 (2022). <https://doi.org/10.1186/s40066-022-00364-7A>
- Ayeni O.M, Sennuga O.S, Bamidele J, Bankole S and Omolayo A.F, (2023). "ICT-Based Market Information and Adoption of Agricultural Seed Technologies Insight from Gwagwalada Area Council, Abuja," *International Journal of Research and Innovation in Social Science*, *International Journal of Research and Innovation in Social Science (IJRISS)*, vol. 7(4), pages 94-105
- Ezealaji N.L.O (2012). Palm oil marketing and distribution pattern in Imo State, Nigeria . an application of linear programming model. *Journal of Agricultural Research and Development* 2(1): 37-43
- Nwafor, C.U., Ogundeji, A.A. and van der Westhuizen, C. (2020). Adoption of ICT-based information sources and market participation among smallholder livestock farmers in south africa. *Agriculture*,10(2): 1-44
- Nwalieji, H.U and Ojike, H.U (2018). Characteristics of Small-Scale Palm Oil Production Enterprise in Anambra State. *Journal of Agricultural Extension* Vol. 22 (1)
- Nwankwo, O.O. and Nwosu, U.L.(2018). Marketing cost and value chain analysis of oil palm fruit processing in Imo state Nigeria. *Journal of Agriculture and Food Sciences* Volume 16 Number 1, pp 107-125
- Ogunleye, K. Y., Adebayo, B. O. and Adebayo, F.V. (2022). Information and communication technology usage for marketing among agricultural produce dealers in Ogbomoso North Local Government Area, Oyo state. *International Journal of Agricultural Economics and Rural Development* - 12 (1): 53-58.
- Okidim, I. A., Hermon, G. I. and Obe-Nwaka, M. O. (2019). Palm oil marketing and financing in Oyigbo local government area of Rivers state *International Journal of Agricultural Economics and Rural Development* - 10 (1)
- Okolo, C.C., Okolo, E.C., Nnadi, A.L., Obikwelu, F.E., Obalum, S.E. and Igwe, C.A. (2019). The oil palm (*Elaeis guineensis* Jacq): nature's ecological endowment to Eastern Nigeria. *Agro-Science*, 18 (3), 48-57. DOI: <https://dx.doi.org/10.4314/as.v18i3.9>

- Onwubuya, E. A., Ajani, E. N. and Nwalieji, H. (2012). Assessment of oil palm production and processing Among Rural Women in Enugu North Agricultural Zone of Enugu state, Nigeria. *International journal of Agricultural sciences*. 2 (12): 322-329.
- Onyeneke, R. U . & Madukwe, D. K (2010). Adaptation Measures By Crop Farmers In The Rain Forest of Nigeria. *Science World Journal Vol 5 (No 1) 2010* www.scienceworldjournal.org ISSN 1597-6343
- Onyeneke R.U, Nwajiuba C.A, Emenekwe C.C, Nwajiuba A, Onyeneke C.J and Ohalete P (2019). Climate change adaptation in Nigerian agricultural sector: A systematic review and resilience check of adaptation measures. *AIMS Agriculture and Food Vol. 4, Issue*
- Tiku N.C, and Bullem, F.A (2015). Oil palm marketing Nigeria lessons to learn from Malaysia experience, opportunities and foreign direct investment in Cross Rivers State, Nigeria. *Journal of Development and Agricultural Economics*. 7(7) 243-252
- Ugbajah, M. O. & Anajemba, P. E. (2018). Analysis of Cost and Returns of Palm Oil Marketing in Anambra State, Southeast, Nigeria. *American Academic & Scholarly Research Journal*, 10(2): 1-9.
- Worlu,A.A, Morris R.E and Njejiwu I.I (2023). Analysis of palm oil marketing in Ikwerre LGA, Rivers State, Nigeria. *Nigeria Agricultural journal* .54(1):493-499
- Zodidi, C. (2022). The effect of ICT Use in enhancing market participation and household welfare outcomes among smallholder farmer in the eastern cape province of South Africa. Published MS thesis school of agricultural Earth and Environmental science University of Kwazulu Natal, South Africa. Pp 142