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ARAŞTIRMA MAKALESİ **RESEARCH ARTICLE**

Profitability of Melon Processing Among Women In Enugu State, Nigeria

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Abstract

The processing of melon is a means of livelihood in Nigeria, especially among rural women. Its role cannot be overemphasised in the lives of rural women who are vulnerable to poverty and food insecurity. Despite the vital role of melon processing in women's livelihoods, little has been done about its economic potential. This study, therefore, analysed the economics and drivers of profitability of melon processing among women processors in Enugu state, Nigeria. A four-stage sampling technique was used to select a sample of 150 respondents. Data collected were analysed using descriptive statistics, gross margin, logistic and Tobit regressions. The results revealed that the majority of melon processors were married, adults, well experienced and had melon processing as their major occupation. Marital status, household size, cooperative memberships, and income from melon processing were the positive factors influencing melon processing, while educational qualification negatively influenced it. Women melon processors had a net profit of ₦18,163.72 (US $47.68) per 50kg melon processed, a profit ratio of 0.28, a benefit-cost ratio of 1.39, a return on capital invested of 0.39, and an operating ratio of 0.69. Thus, melon processing among the women was a profitable enterprise. The profitability of melon processing was influenced positively by market access, major occupation, price of processed melon, and marital status but negatively influenced by the cost of processing, price of unshelled melon, and transportation cost. The study recommends government intervention by providing conducive and accessible markets and subsidizing shelling machines and transportation costs to reduce the cost of processing, which will, in turn, enhance the profitability of melon processing.

Keywords: Drivers, Gross margin, Livelihood, Melon processing, Rural women

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1. Introduction

Agriculture and allied activities play a prominent role in the economies of developing nations, and provide job and food for the growing population (Gosh, 2021; Mukaila and Arene, 2022). The agricultural sector has continued to empower Nigerian women, especially in the area of marketing and processing of produce such as melon. More than half of Nigerian women live in rural areas and work in agriculture (Abdullahi et al., 2015). Women do not only play a major role in agricultural production but also play a vital role in post-harvest activities in developing countries, including Nigeria. Women constitute sixty percent of the farming workforce and perform seventy percent of farm work (NSWF, 2014). They contribute significantly to the economy of a nation, rural and agricultural development, especially in developing economies. Agriculture employs more than 60% of women in sub-Saharan Africa (FAO, 2011). Their involvement in agriculture is vital to meeting global food demand and attaining food security globally (Mutandwa and Wibabara, 2016). Rural Nigerian women engage in several activities related to agriculture, ranging from production, processing, and marketing of produce. Among the widely processed and marketed crops by women is melon, locally called *egusi* in Nigeria. Most women who engage in the marketing of this vegetable crop also perform processing functions alongside.

Melon (*Colocynthis citrillus* L.) is one of the economically important vegetable crops globally and is grown in both tropical and temperate regions (Oyediran et al., 2016). It is an important indigenous oilseed consumed by many rural and urban communities in West Africa (Bankole and Adebanjo, 2003). It plays a vital role in the income generation ability of farmers and processors, especially rural women. Melon is a popular seed widely used to make varieties of soups in Nigeria, where it results in flavouring, fat binding, emulsifying, and thickening (Eze et al., 2017). It also plays a major role in the farming system of West Africa. It serves as a cover crop, fertilizing the soil and suppressing weeds (Abiola and Daniel, 2014).

Processing of melon is done on a small scale among rural women in Nigeria. It plays a vital role in the economic status of rural women and serves as a means of livelihood for many households in Nigeria (Obetta et al., 2020a). Efficient food processing and marketing systems play an important role in reducing post-harvest losses. It ensures adequate returns on farmers' investments and encourages an increase in food production, thereby boosting Nigeria's state of food security through appropriate information regarding the prices of agricultural products (Ladele and Ayoola, 1997; Mukaila et al., 2021). The processing of melon, thus, has the potential to improve the economic status of women, thereby alleviating poverty, which is very high in the rural areas by providing the women with the cash needed to meet their basic needs.

The need to enhance women melon processors' profitability in order to enhance more participation and consequently eradicate poverty motivated this study. Most of the previous studies on melon concentrated on its production (Yusuf et al., 2008; Ugwumba, 2010; Ogbonna, 2013; Mohammed, 2013; Abiola and Daniel, 2014; Oyediran et al., 2014; Sanusi, 2015; Oyediran et al., 2016; Iwuchukwu and Ekeh, 2017). However, this valuable vegetable crop has received less attention in its processing and marketing. This poses a serious threat to the processing of melon since there is no or little documented work on the economic potential of processing melon, including the drivers of its profitability among women processors. Understanding the economics of melon processing in terms of its profitability and its drivers is very important for policy intervention regarding rural women to increase their profitability and improve their wellbeing. This study becomes imperative as an understanding of costs and margins is essential for those involved in agricultural processing and other activities.

Therefore, the present study analyses the economics of melon processing and the determinants of its profitability among women processors in Enugu State, Nigeria. Specifically, the study describes the demographic and institutional characteristics of women melon processors; examines the determinants of processing melon as their major occupation; analyses the profitability of melon processing among women processors; and identifies the factors affecting the profitability of melon processing.

2. Materials and Methods

2.1. Study area

The study was carried out in Enugu State, Nigeria. The state has 17 Local government Areas (LGAs) which were further grouped into six Agricultural Zones: Enugu-Ezike, Nsukka, Enugu, Agbani, Awgu, and Udi agricultural zone based on agro-ecology. The state has a total land area of 7,161 km^2 (2,765 sq mi). The state is located between latitudes

$5^0$55`N and $7^0$08'N of the equator and longitudes $6^0$55' E and $7^0$08' E of the Greenwich meridian. The state shares boundaries with Ebonyi State to the East, Benue State to the Northeast, Kogi State to the Northwest, Anambra State to the West, Abia State, and Imo State to the South (Obetta et al., 2020). This makes the melon processors in the state have access to market processed melon to other parts of the country. The majority of the people in the state reside in rural areas and engaged in farming activities.

2.2. Sampling techniques

A four-stage sampling technique was used to select the respondents for the study. The Enugu-Ezike Agricultural zone was purposively selected in the first stage. The purposive selection was because the major means of livelihood of the people in the zone is farming, and there are a lot of women melon processors who are also engaged in the marketing of melon in this zone. There are also many melon markets in the zone. The second stage involved the selection of all the three LGAs in the zone (Igbo-Eze South, Igbo-Eze North and Udenu LGAs). The third stage involved another purposive selection of two markets from each of the three LGAs (Orie-Iheka and Nkwo-Ibagwa markets from Igbo-Eze-South LGA; Orie Igbo-Eze market and Imufu markets from Igbo-Eze North LGA; Orie Orba and Afor Obollo markets from Udenu LGA), giving a total of six markets. These markets were selected because they are the major markets in the zone and there are a lot of women involved in melon processing and marketing. The last (fourth) stage involved a random selection of twenty-five women melon processors from each market, making a total of 150 respondents for the study. *Table 1* presents the sampling design for the study.

Table 1. Sampling design for the study

Local Governments	Markets	No of respondents	Percentage
Igbo-Eze South	Orie-Iheka	25	16.7
	Nkwo-Ibagwa	25	16.7
Igbo-Eze North	Imufu	25	16.7
	Orie-Igbo-Eze	25	16.7
Udenu	Orie Orba	25	16.7
	Afor Obollo	25	16.7
Total	Six	150	100

Source: Authors' computation

2.3. ***Data collection method***

The study adopted a cross-sectional survey design. The source of data used for this study was generated primarily. This involved the use of an interview schedule and a structured questionnaire designed to capture the vital socioeconomic and institutional data needed and data on costs and returns from melon processing. The response of these female melon processors formed the primary data used. The field survey was conducted between October 2019 and January 2020.

2.4. ***Data analysis***

A descriptive statistic, logit regression, gross margin analysis, and Tobit regression were used to analyse the data collected. The descriptive statistical analyses used include frequency distribution tables, means, and percentages. These were used to describe the socio-economic profiles of the women melon processors.

Logit regression is a predictive model used when the dependent variable is dichotomous. It was used to identify the factors influencing melon processing as a major occupation. The model (Eq1) for this study is stated as:

$$Y = \beta_0 + \beta_1 AG + \beta_2 MS + \beta_3 HS + \beta_4 ED + \beta_5 CM + \beta_6 AM + \beta_7 IN + \beta_8 PM + e \quad \text{(Eq. 1)}$$

Where Y is the decision on processing melon as the major occupation (1 if Yes, 0 if no), β_0 is the intercept, $\beta_1 - \beta_8$ are the coefficients, AG is age (in years), MS is the marital status (1 if married, 0 if otherwise), HS is the household size (number of people living as a family), ED is the highest level of education (number of years of successful schooling), CM is cooperative membership (yes =1, no = 0), AM is access to market (yes =1, no = 0), and IN is melon processing income (in naira, ₦).

Gross margin was employed to estimate the cost and return of melon processing in the study area. Gross margin

(Eq.2) has been widely used by researchers (e.g., Akanbi et al., 2020) in studies on economic analysis of the agricultural products.

Gross Margin = Total revenue – Total variable cost (Eq. 2)

Net profit (Eq.3,4) was used to calculate the profit made by the women processors in melon processing after all expenses have been deducted.

Net profit = Gross margin – Total fixed cost (Eq. 3)

Or

Net profit = Total revenue – Total cost (Eq. 4)

A profitability ratio (PR) was used to show the profitability and financial health of melon processing by comparing net revenue to its sale. It is estimated as follows:

$$\text{PR} = \frac{\text{Net profit}}{\text{Total revenue}} \quad \text{(Eq. 5)}$$

The operating ratio (OR) was used to measure the proportion of the gross income used for operating expenses.It is expressed as Eq.5:

$$\text{OR} = \frac{\text{Total variable cost}}{\text{Total revenue}} \quad \text{(Eq. 6)}$$

The net return on capital invested (NRI) was used to assess the gain per unit of investment, that is, the profit made per ₦1 or $1 invested.

$$\text{NRI} = \frac{\text{Net profit}}{\text{Total cost}} \quad \text{(Eq. 7)}$$

The benefit-cost ratio (BCR) was measured to indicate the strength and viability of the melon processing enterprise and its benefits. It is estimated as:

$$\text{Benefit} - \text{cost ratio} = \frac{\text{Total revenue}}{\text{Total cost}} \quad \text{(Eq. 8)}$$

A Tobit regression model was used to determine the factors that influence the profitability of melon processing. The model is explicitly stated as Eq.9:

$$Y = \beta_0 + \beta_1 AG + \beta_2 ED + \beta_3 EXP + \beta_4 MO + \beta_5 PUM + \beta_6 CP + \beta_7 PM + \beta_8 TC + \beta_9 MS + \beta_{10} AM + e \text{ (Eq. 9)}$$

Where Y is the profitability of melon processing (ratio), β_0 is the intercept, $\beta_1 - \beta_{10}$ are the coefficients, AG is age (in years), ED is the highest level of education (number of years of successful schooling), EXP is the processing experience (years), MO is the major occupation (melon processing = 1, others = 0), PUM is the price of unshelled melon (in ₦), CP is the cost of processing (in ₦), PM is the price of processed melon (in ₦), TC is the transportation cost (in ₦), MS is the marital status (married = 1, otherwise = 0) and AM is the access to the market (Yes = 1, no = 0).

3. Results and Discussion

3.1. Demographic and institutional characteristics of women melon processors

Table 2 shows the demographic and institutional profile of the women melon processors. The majority (57.3%) of the women melon processors were between the ages of 41 and 50 years old, followed by 18.7% with an age range of 31 to 40 years. They had an average age of 51 years. This indicated that the women processors were adults who were still in their economically active age range and could make positive contributions to melon processing. This is in line with Ajepe et al. (2016), who reported that women melon processors were adults and economically active. The majority (86.7%) of the women processors were married, 11.3% were single while only 2% were widowed. The women processors had an average household size of six people per household. This suggests the availability of a larger household size, which was employed as family labour in melon processing, thereby reducing the cost of processing melon. A larger household size increases the probability of getting physical assistance from family members, which enhances the proliferation of a venture (Falola et al., 2022b; Gbigbi, 2021; Mukaila et al., 2022).

Table 2. Demographic and institutional characteristics of the women processors (n = 150)

Variables	Categories	Percentage	Mean
Age (Years)	≤ 30	5.3	51
	31 - 40	18.7	
	41 - 50	57.3	
	51 - 60	13.3	
	≥ 61	5.3	
Marital status	Single	11.3	
	Married	86.7	
	Widowed	2	
	Divorced	0	
Educational level	No formal education	10	
	Primary education	53.3	
	Secondary education	22	
	Tertiary education	14.7	
Household size	≤ 5	38.7	6
	6 - 10	58.7	
	≥ 11	2.7	
Processing experience	≤ 10	28.7	13
	11 - 20	61.3	
	21 - 30	6	
	≥ 31	4	
Major occupation	Melon processing	77.3	
	Trading	4	
	Farming	8.7	
	Civil servant	10	
Annual income (₦)	≤ 100,000	10	₦286,400
	100.001 – 200.000	17.3	
	200.001 – 300.000	34	
	300.001 – 400.000	31.3	
	≥ 400,001	7.3	
Cooperative membership	Member	11.3	
	Non-member	88.7	
Source of fund	Personal saving	80.7	
	Relatives and friends	6	
	Moneylender	2	
	Cooperative	10	
	Bank	1.3	
Access to credit	Have access	19.3	
	Do not have access	80.7	
Access to extension services	Have access	20.7	
	Do not have access	79.3	

Regarding their educational status, more than half of the respondents had primary education while a few had tertiary education. Considering the level of education in rural Nigeria among women, the women melon processors can be said to have basic education. This may result in increased output/productivity since education increases the level of production in agriculture (Ogbonna et al., 2007; Reimers and Klasens, 2013). Education plays a significant role in the adoption of innovation and efficient practice of agricultural activities including production, processing and marketing. The women melon processors can be described as experienced melon processors as they spent an average of 13 years in the ventures (*Table 2*). This suggests that melon processing is not a new practice to the

people in the study area. The time spent in a profession determined how skilful they are; thus, the women melon processors can be referred to as skilled melon processors. High level of experience could positively influence marketing efficiency (Adewumi and Omotesho, 2002), thus the women processors can be said to have marketed their products efficiently. The majority of the women had melon processing as their major occupation. They had an average annual income of ₦286,400 (US $751.76) from processing melon. This implies that melon processing was a major means of livelihood to women in the study area and serves as a source of income to them, thereby improving their economic status.

The level of cooperative membership among the women processors was very low, as only 17.3% belonged to a cooperative society (*Table 2*). Thus, the majority of them do not belong to any cooperative society where they can pool their resources together to enjoy economies of scale and other benefits. This suggests that many of them will not get any financial support from such an organisation. Whereas the few that belonged to a cooperative society enjoyed the benefits of the society. The majority of the women processors had their source of funds from personal saving, followed by the cooperative society (10%). Access to credit was thus very low (19.3%) among the women processors due to a lack of collateral, which was required in the commercial banks, and low participation in a cooperative society. It is worth noting that the few that could access credit got it mainly from cooperative societies (for those that were members), followed by friends and family. Capital is very important in agricultural activities as it determines the level of investment (Mukaila et al., 2021, Falola et al., 2022a). Also, readily available and effective credit is a driving force in effectively managing an agricultural enterprise. Low credit access hinders women melon processors' processing activities as personal funds are not enough to operate on a large scale. Access to extension services by women processors was low in the study area, as only 20.7% had access to extension services. This contributed to the low participation in cooperative societies as the women were not well informed about the importance of joining cooperative societies in their ventures.

3.2. Determinants of melon processing

Table 3 presents the result of logistic regression for the determinants of melon processing. The probability value of the chi-square was significant (P<0.01), which indicates that the model has a good fit. The significant factors influencing the decision to process melon as a major occupation were marital status, household size, educational qualification, cooperative memberships, and income from melon processing.

As shown in *Table 3*, marital status was positively significant (P < 0.05). The marginal effect of marital status revealed that an increase in the probability of being married increases the likelihood of choosing melon processing as a major occupation by 30.5%. Thus, married women had a higher probability of processing melon as their major occupation than their counterparts. This is because married women can get financial assistance from their husbands, thereby increasing their capital used in processing melon. It could also be due to the availability of family labour that can be used in processing melon. This, in turn, increased their probability of processing melon as their major occupation.

Similarly, household size was positively significant in relation to melon processing (P < 0.01). The marginal effect of household size revealed that an increase in household size increases the likelihood of choosing melon processing as a major occupation by 13%. Thus, women processors with a large household size are likely to process melon as their major occupation. This conforms to a priori expectations and agrees with the findings of Mbanasor and Kalu (2008). A larger household size implies the availability of family labour for melon processing activities, thereby reducing the cost of labour and making the women concentrate on melon processing as their major occupation.

Educational qualification was negatively significant in relation to having melon processing as a major occupation (P < 0.05). The marginal effect of educational qualification reveals that an increase in the educational level of women processors decreases the probability of choosing melon processing as a major occupation by 15.4%. This suggests that the lower the educational qualification of the women in the study area, the higher the probability of their engaging in processing melon as their major occupation. This is not surprising as highly educated women prefer a white-collar job as their major occupation, thereby processing melon as a minor occupation. Women with a lower level of education process melon as their major occupation as they do not have an educational certificate that warrants white-collar jobs.

The coefficient of cooperative membership was positively related to having melon processing as their major occupation (P<0.05). The marginal effect of membership in a cooperative society revealed that an increase in the likelihood of being a member of a cooperative society increases the probability of choosing melon processing as a major occupation by 36.2%. This implies that a cooperative society had a positive effect on women's melon processors. Due to financial assistance and the dissemination of useful information from the cooperative society, the women who belonged to it had melon processing as their major occupation. Membership in an association enables members to get proper information on best melon practices to increase their profitability (Sanusi, 2015). This, however, increased their probability of making melon processing the major occupation.

The coefficient of income derived from melon processing was positively related to having melon processing as their major occupation (P<0.1). The marginal effect of income derived from melon processing revealed that an increase in income derived from melon processing increases the likelihood of choosing melon processing as a major occupation. The income derived from processing melon serves as an incentive to rely strictly on processing melon as their major occupation.

Table 3. Estimates of logistic regression for the determinants of melon processing

Variables	Coefficient	Std. error	t-values	p-value	Marginal effect
Age	-0.0209419	0.0333766	-0.63	0.530	-0.0039713
Marital status	1.606067**	0.8166783	1.97	0.049	0.3045626
Household size	0.6845171***	0.2113515	3.24	0.001	0.1298068
Educational qualification	-0.8083945**	0.4068014	-1.99	0.047	-0.153298
Cooperative membership	1.636688**	0.8109418	2.02	0.044	0.3617606
Access to market	1.996435	1.392182	-1.43	0.152	0.3785891
Income from melon processing	5.96e-06**	2.81e-06	2.12	0.034	1.13e-06
Constant	-1.368906	2.708627	-0.51	0.613	
Log likelihood	-65.322531				
Pseudo R^2	0.396				
LR chi2 (7)	54.28				
Prob > chi2	0.0000				

*** p<0.01, ** p<0.05, * p<0.1

3.3. Estimation of the profitability of melon processing

Regarding the profitability of melon processing, *Table 4* shows the results of gross margin, net profit, operating ratio, and net return on capital invested for melon processing in the study area. The cost of unshelled melon had the highest share (88.08%) of the total cost, followed by the cost of processing (4.28%), depreciation on equipment (2.39%), transportation cost (1.90%), cost of labour (1.50%), rent (0.73%), tax (0.72%) and cost of bagging (0.40%).

The average gross value of the women processors' output was ₦65,057.73 (US $170.77) per 50 kg bag. The total variable cost and the total fixed cost incurred were ₦45,093.66 (US $118.36) and ₦1,800.35 (US $4.73) per 50kg bag, respectively, making the total cost of processing to be ₦46,894.01 (US $123.09). The result of the gross margin analysis for melon processing was ₦19,964.07 (US $52.40) per 50kg. However, the women processors made a net profit of ₦18,163.72 (US $47.38) per 50 kg bag. The profitability ratio of melon processing was 0.28, which means that 28 percent of the total revenue was made as profit. Given the obtained net profit and gross margin, a net return on capital invested of 0.39 and an operating ratio of 0.69 were obtained. The return on capital invested of 0.39 implies that for every US $1 invested, US $0.39 was gained as profit by the women melon processors. Also, the operating ratio for the women's processors of 0.69 implies that 69% of total revenue was used for operating expenses. The enterprise had a positive benefit-cost ratio greater than one. Therefore, melon processing could be described as a profitable venture as it gave a relatively high net profit and a return on capital invested.

Table 4. The profitability of 'egusi' melon processing

Variables	Values (₦ per 50kg)	Share of total cost (%)
Total revenue (A)	65.057,73	
Variable cost		
Cost of unshelled melon	41.302,06	88.08
Cost of transportation	892.23	1.90
Cost of processing	2.008,89	4.28
Cost of labour	704.89	1.50
Cost of bagging	185.59	0.40
Total variable cost (B)	45.093,66	96.16
Gross margin (C) = A- B	19.964,07	
Fixed cost		
Rent	340.36	0.73
Depreciation on equipment	1.122,95	2.39
Tax	337.04	0.72
Total fixed cost	1800.35	3.84
Total cost (D)	46.894,01	
Net profit (E) = (A-D)	18163.72	
Operating ratio (B/A)	0.69	
Net return on capital invested (C/B)	0.39	
Benefit-cost ratio (A/D)	1.39	

3.4. Factors influencing the profit level of melon processing

Table 5 presents the estimates of the Tobit regression model used to determine the significant factors influencing the profitability of melon processing. The chi-square was significant ($P<0.01$), which implies that the model has a good fit. The significant factors influencing the profitability of melon processing were major occupation, price of unshelled melon, cost of processing, price of processed melon, transportation cost, marital status, and access to the market.

The coefficient of major occupation was positively related to the profitability of melon processing ($p<0.01$). This suggests that having melon processing as a major occupation acts as a catalyst for the profitability of melon processing. This implies that women processors who have melon processing as their primary occupation make more money than those who have it as a secondary occupation. This was a result of dedicating all energy, time, attention, capital, and other resources to the processing of melon.

The coefficient of the price of unshelled melon was negative and significant in relation to melon processing profitability ($P<0.01$). This implies that the profitability of melon processing decreases as the price of unshelled melon increases. This agrees with the apriori expectation as the cost of unshelled melon accounted for the highest share of the total cost in melon processing (see *Table 4*). Thus, a reduction in the unit price of unshelled melons would enhance the profitability of the enterprise.

The coefficient of cost of processing was negatively related to the profitability of melon processing ($P<0.01$). This suggests that as the cost of processing melon increases, the profit made from melon processing decreases as well. This is not surprising as the cost of processing is a major variable cost in melon processing ventures. A higher cost of processing will thus reduce the profitability of melon processing.

In the same vein, the coefficient of transportation cost was negatively related to the profitability of melon processing ($P < 0.01$). This suggests that a proportionate increase in transportation costs reduces the profitability of melon processing. Transportation costs increase the total variable cost of the agricultural enterprise, which lowers the profitability of an enterprise. Due to the poor road network, the women processors spent a large amount of time conveying their commodities from the farm gate to the processing centre and the market. The high cost of transportation thus hindered their profitability.

The price of processed melon was positively related to the profitability of melon processing ($P < 0.01$). This suggests that an increase in the price of processed melon increased the profitability of the venture. This conforms with the a priori expectation as the price of selling processed melon determines the total revenue derived from the venture. This finding implies that an increase in the price of processed melon will result in a proportionate increase in the profitability of processing melon. Therefore, the price of processed melon is an enhancing factor for the profitability of processing melon.

The coefficient of marital status was positively related to the profitability of melon processing ($P < 0.01$). This suggests that the probability of being married increased the profitability of melon processing. This is because married women processors had household members who served as family labour and assisted in processing melon. This thus waives the cost of labour, which, in turn, lowers the total variable cost and increases the profitability. Whereas their counterparts (single women processors) spent money on hiring labourers in their processing activities, which increased their total variable cost and reduced their profitability. In addition, married processors accessed financial assistance from their spouses, which enhanced their level of productivity and, consequently, their profitability.

The coefficient of access to the market was positively significant in relation to the profitability of melon processing ($P < 0.05$). This suggests that the higher the probability of getting access to the market, the higher the profit derived from processing melons. The performance of an enterprise depends on the efficiency of the market (Eze and Orebiyi, 2005; Agbugba et al., 2011). Access to the market is a very important tool in agriculture, which is characterized by the perishable nature of its produce. Access to the market increases the turning over of capital as access to the market increases the sales of agricultural produce. Lack of access to the market or a poor market system will lead to poor pricing and low profit. Therefore, access to an efficient market increases the profitability of melon processing.

Table 5. Factors influencing the profitability of melon processing

Profit ratio	Coef.	Std. Err.	t	P>t
Age	0.0007574	0.0006378	1.19	0.237
Education	0.003184	0.0071171	0.45	0.655
Processing experience	0.0005401	0.0005554	0.97	0.332
Major occupation	0.0066666***	0.0016750	3.98	0.000
Price of unshelled melon	-0.0000143***	1.81e-06	-7.88	0.000
Cost of processing	-0.000015***	2.04e-06	-7.33	0.000
Price of processed melon	0.0006015***	0.0000214	28.07	0.000
Transportation cost	-0.0000974***	0.0000319	-3.06	0.003
Marital status	0.0126895***	0.0049763	2.55	0.012
Access to market	0.0026126**	0.0012382	2.11	0.037
Constant	0.0859504	0.0524341	1.64	0.103
Sigma	0.0517814	0.0029896		0.046
Log likelihood = 231.26773				
LR chi2(10) = 308.33				
Prob > chi2 = 0.0000				
Pseudo R2 = 19.99				

4. Conclusions

Previous studies on melon largely focused on its production. This study, therefore, focused on the profitability of melon processing among rural women in Nigeria. This study shows that the processing of melon plays a significant role in the livelihood of women in rural areas as it serves as their major source of income and livelihood in the study area. The decision of women to process melon as a major occupation was positively influenced by marital status, household size, cooperative memberships, income from melon processing, and the price of processed melon, but negatively influenced by educational qualification. Processing of melon was a profitable venture among the women processors and gave a relatively high net return on investment. The factors that enhanced the profitability of melon processing among women processors were the price of processed melon, access to the market, major occupation, and

marital status, while the cost of processing and transportation costs inhibited it.

The study recommends government intervention in the processing of melons by subsidising the shelling machine to reduce the cost of processing. The government should also improve infrastructure, such as roads, which will reduce the high cost of transportation due to bad roads. The provision of accessible and affordable financial assistance to women melon processors by government and non-governmental organizations in the form of grants or credits is critical, as this would increase their productivity from small to large scale. This would encourage more participation in melon processing, especially by the youth, thereby solving the problems of unemployment and poverty facing the country. Also, the women processors need to be encouraged to form and join cooperative societies where they can pool resources to solve their financial challenges and get useful price information. This can be achieved by designating more extension agents to the study area who will educate them on the importance of a cooperative society and how to operate it effectively.

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