# Determinants of Marketing Margin and Efficiency of Wholesale Marketing of Cocoyam in Southeast, Nigeria

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**ABSTRACT:** *Cocoyam is highly seasonal and perishable. An efficient wholesale marketing system makes its consumption, round the year possible, reduces postharvest losses for greater marketing margin. This study examined the determinants of marketing margin and efficiency of wholesale marketing of cocoyam in Southeast, Nigeria. The specific objectives were to examine the socio-economic characteristics of cocoyam wholesale marketers, estimate the marketing margin and efficiency of the wholesale marketing of cocoyam and examine the socio-economic factors of the wholesalers affecting their net marketing margin. Multistage, purposive and random sampling techniques were used to generate relevant data using a structured questionnaire administered to 216 cocoyam wholesale marketers in 18 markets in three states of the southeast (Anambra, Enugu and Imo). Descriptive statistics and inferential statistics (Gross margin and Efficiency Analysis and Multiple Regression) were used to analyse the data. Result on the socio economic characteristics of cocoyam wholesale marketers shows that no marketer was below the age 20 years and above 60 years with the mean age of 46 years. Majority (80%) of the marketers were married with mean family size of 5. The high gross margin of ₦20,387,212 and net marketing margin of ₦2,817,524 indicates profitability and the efficiency coefficient value of 84% indicates a high level of efficiency. The results of the influence of socio-economic variables of the respondents on the net marketing margin shows that six variables (age, marketers` experience, years of formal education, selling price, purchase price and quantity of cocoyam sold) were statistically significant while the remaining variables were not. The $R^2$ value of 0.875 implied that 88% of variation in the net marketing income realized by the marketers was due to variations in the independent*

*variables and the remaining 12% was as a result of stochastic noise. The F-value of 189.390 was statistically significant at 5% level of probability. This implied that socio-economic variables of the respondents together significantly influenced net marketing income, and that regression model was a good fit. It is recommended that adequate facilities such as good road network be provided especially to the rural areas (production site), storage and processing facilities should be subsidized by government for efficient marketing of agricultural produce, especially cocoyam.*

**KEY WORDS**: cocoyam, wholesale, marketing margin, efficiency

## INTRODUCTION

Agriculture is an important part of the economy of both developed and developing countries of the world. In Nigeria, agriculture was the mainstay of the economy before crude oil assumed a place of significance in the 1970s as the major source of foreign exchange. This development relegated agriculture to the background as a major source of foreign exchange and also threatened the nation's food security (Matemilola and Elegbede, 2017). Indeed agriculture remains at the heart of Nigeria's efforts to diversify the economy. The agricultural sector currently accounts for 42% of the country's Gross Domestic Product (GDP) and provides employment to more than 70% of the people. This is against its pre-independence contribution to GDP which stood at about 90% in 1960 (Central Bank of Nigeria (CBN), 2014). If the nation must realize its vision of becoming a leading economy in Africa and a major player in the world economy, Nigeria needs to speed up its economic growth by focusing on vital economic sectors like agriculture (Adepetun, 2008, Oyawole, 2014).

Cocoyam production, marketing and consumption are interwoven enterprises that sustain many rural dwellers (Onyeka, 2014). The role of marketing in further enhancing the contribution of cocoyam to the economy, not just of the rural households but also of the whole country, cannot be over emphasized. As noted by CGIAR (2023), cocoyam has huge market and seen to be highly profitable. Yet the production and marketing of the crop has received very little attention from agricultural researchers and government policymakers when compared with other roots and tubers. Cocoyam marketing is the activity that organizes the meeting between supply and demand of the product to agree on a single price that is satisfactory to sellers and buyers. Marketing margin exists because a product passes through many hands (from producer to the consumer) and because each intermediary offers some services before the good reaches the consumers. (Arene, 2008). Accordingly, Morello, (2017) noted that wholesale marketing margin is the difference between the unit

of a product and the wholesale price of the same unit. It thus can be a useful statistics showing how the consumers' expenditure is divided among market participants at different levels of the supply chain. According to Abbot and Makeham ((1990) noted that marketing margin is commonly used as a measure of performance of the supply chain. Additionally, can be used to assess agricultural marketing efficiency.

Wholesale marketing plays an important role in improving agricultural marketing efficiency, developing rural economy and promoting the process of agricultural modernization (Tang, 2011). Efficient marketing system is the one that induces the production of products and quantities which when sold to the consumer results in maximum returns after the deduction of marketing charges and farm production cost (Kohls and Uhl, 2002). Efficient marketing infrastructure such as the wholesale is essential for cost-effectiveness. In a competitive market, prices are flexible and are thought to be responsible for efficient resource allocations and price transmission. Farm prices differ with region or location, depending on whether the production area is near or far from the principal market areas and also storage operations, transportation etc. Wholesale market can deliver important market information to the farmers and retailers, such as demand price information. These activities contribute to price formation. Prices in a market economy are important both economically and politically because both strongly influence the level of income, play a central role in guiding production and consumption, and influence human behaviour.

The level of efficiency of market and marketing functions are important for sustainable marketing of agricultural products like cocoyam. Efficient marketing system ensures that goods which are seasonal are made available all year round, with little variation in prices, which can be attributed to cost of marketing functions like storage, processing, and transportation (Nwaru, Nwosu and Agommuo, 2011). In sum, an efficient marketing system is beneficial both to the producers and consumers and an efficient wholesale marketing activities tend to add spatial and possession utility to food products like cocoyam. Cocoyam is highly seasonal and perishable. Although cocoyam stores longer even after harvest (between the months of July and February), and can be left in the ground until needed, thereby providing food all year round (Onyeka, 2014), an efficient marketing system makes its consumption, round the year possible especially in the areas of deficits. Opara (2001) highlighted various forms of storing freshly harvested cocoyam corms before selling to include traditional, ventilated and refrigerated storage. These ensure availability of the product long after harvest. Additionally, the original forms can be changed to forms which can give maximum satisfaction to different classes of consumers (Posner, 2011), thereby making it possible for the product to realize its full market potentials. Processing it into chips, flour and other forms will not only provide consumers with desired satisfaction, but significantly reduce post-harvest losses.

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According to Rits, (2014), marketing efficiency is the ratio of market output (satisfaction) to marketing inputs (costs of resources) Therefore, it is important that marketers are efficient in marketing their commodities like cocoyam, this will ensure that they have greater marketing margin. What factors go into this marketing margin determination and examining that in the context of wholesale marketing of cocoyam in the Southeast, Nigeria is the focus of this work. It seeks to examine, specifically, the determinants of Cocoyam wholesale marketing margin and efficiency with view to improving distribution efficiency, promoting greater transparency and better price formation through a clearer interplay of supply and demand. Based on the above backdrop, the objectives of this study include to:

i examine the socio-economic characteristics of cocoyam wholesale marketers
ii estimate the marketing margin and efficiency of the wholesale marketing of cocoyam
iii examine the socio-economic factors of the wholesalers affecting their net marketing margin

**Theoretical and Empirical Evidence:**

**Theory of Pricing and Price Determination**
Price refers to what the buyer gives and what the seller receives in return for a product. According to Agbonifoh, Ogwo, Nnoli and Ananyo (2007), price determination or price fixing is the process of arriving at a price by interplay of demand and supply. The process of buyers and sellers arriving at a transaction price for a given quality and quantity of a product at a given time and place, is referred to as price discovery. Price determination starts at farm gate level and varies across the supply chain, place, time, and quality. How a particular product price behaves in terms of the level and the frequency of change may differ with the structure of the market for that product. On this basis, economic theory argues that agricultural product price behaviour can better be explained by demand theory (Sredl, &Soukup, 2011). Demand function describes the relationship between price and the quantity buyers are willing and able to buy as long as other factors are held constant. Price theory suggests an inverse relationship between price and quantity demanded of a product (an increase in price, leads to a decrease in quantity demanded).

As market structure determines product price, it is being determined by some interrelated concepts such as number, size, location and competiveness of buyers and sellers, barriers to entry, degree of product differentiation, market information and price reporting (Ajie, 2014). In a purely competitive market, it is assumed that every producer seeks to maximize profit by selling at as high a price as possible, and every buyer seeks to maximize utility by obtaining product at as low a price as possible. This collective action or interplay determines price. In oligopoly and monopolist markets, price behaviour varies with their structure. Here, individual firms have some level of price control. Other market or product

characteristics that could affect pricing decisions include the durability of the commodity, adequacy of grade description (where relevant), bulkiness of the product relative to its value, the ratio of fixed to variable costs in the industry, and the continuity and length of the production process. Thus, there is a persistent instability of consumer prices for most agricultural commodities in Nigeria occasioned by factors such as seasonality, input price changes, production and marketing technology and consumer taste among others. The market price variation is considered to affect the level of consumer demand and food security status of the household. Olukosi and Isitor (1990) reported that speculative activities of middlemen, divergence between planned output and realized output, seasonality in production and marketing, and changes in demand and supply were the major causes of variations in agricultural product prices in Nigeria.

Enibe et al (2019) in their Economic Analysis of Cocoyam Marketing in Anambra Agricultural Zone of Anambra State, Nigeria revealed that the cocoyam market intermediaries (Wholesalers and retailers) respectively recorded marketing efficiency of 76% and 62%. This implies that marketing costs made up 76% of the wholesalers' sales revenue while those of the retailers constitute 62%. The result reveals that costs constituted a lower percentage on the part of the retailers than the wholesalers indicating that the retailers were more efficient than the wholesalers in their monthly marketing activities. This is because it is established that the lower the coefficient values in a marketing process, the higher the level of efficiency.

Ajie (2014) deployed multiple regression models to determine the drivers of prices of cocoyam wholesale markets. The result of the analysis indicated that cost of purchases, storage cost, wages and occupational status had positive influences on the selling price. Other factors in the model including communication or ICT expenses, household size, educational status, and transport expenses had negative influences on the price transmission. Thus, only two factors, purchases and ICT expenses exerted statistically significant influences at 1% statistical level. The remaining variables apart from educational status were not major determinants of price in the area.

Mumtaz, Ghulam, Hassam and Wajiha (2015) in their determinants of Potato prices in Punjab, Pakistan, reported that coefficient (0.0093) of cost of production was statistically and significantly influenced prices of Potatoes. Variable of temperature (0.1245) showed positive relationship with price of Potato and highly significant at four percent level. Also area of value of coefficient (-0.0141) showed a negative relationship with prices of Potato. If area under cultivation increases definitely there will be an increase in production which means more supply in the market and prices will go down according to basic economic theory of economics. Coefficient (0,0002) of oil prices (international oil prices) showed positive relationship with potato prices, indicating that increase in the oil prices means

increase in the price of potato. This is because, world oil prices have devastating effect on all economic activities.

Opata and Adeosun (2016), in their study of performance of cocoyam market chain in Southeast, it was revealed that cocoyam producers received maximum price of ₦40,000 (100Kg) during the late season between July and October and a minimum price of ₦16,000 at the early season between November and February. The wholesale price was ₦42,000 while the retail price was ₦45,000 per 100Kg of cocoyam throughout the whole season. There is a similar pattern for farmers, wholesalers and retailers and it can be concluded that all agencies received highest price at the late season. It was equally reported that price spread from producer to wholesalers and retailers were ₦27,000, ₦15,000, and ₦3,000 respectively. The retail prices for cocoyam were reported to be ₦27,000, ₦40,000 and ₦68,000 per 100kg bag of cocoyam in early, mid and late seasons respectively. Generally, the price of cocoyam was very high in all seasons due to the incidence of leaf blight and highest during the late season as a result of storage losses, storage costs, transportation and accommodation.

**METHODOLOGY**

The study area is Southeast of Nigeria. It encompasses five of the 36 states in Nigeria which are Abia, Anambra, Ebonyi, Enugu and Imo. The area has estimated population of 21,162,710 million (NBS, 2023). The warm temperature of the area, its humidity with long wet seasonand high annual rainfall is favourable ecological conditions for cocoyam production (Balami*et al.,* 2012). Its resistance to drought and tolerance for varieties of climate and soil condition has made cocoyam to be one of the three major root and tuber crops heavily cultivated and consumed by the people of the area.

The study is made up of all the wholesale marketers of cocoyam in the South Eastern States (Abia, Anambra, Ebonyi, Enugu and Imo) of Nigeria. Multi-stage, involving purposive and random sampling methods were used to select respondents. At first stage, three States (Anambra, Enugu and Imo) were purposively selected from the five States in the study area. The selection was based on the States majorly known for cocoyam marketing and consumption evidenced from pre-survey study as well as familiarity of the researcher with the terrains of the selected states. From each of the three states, six (3 urban and 3 rural) spatially separated markets were purposively selected to arrive at a total of 18 markets. The selection was based on the concentration of the cocoyam wholesalers as observed from pre-survey study. From each of the markets, 12 wholesalers were randomly selected. This gave a total 216 respondents for the study.

**Data Collection**

Primary data collection was carried out in two phases using trained enumerators who administered a set of well-structured and pre-tested questionnaire to the selected 216 respondents.

**METHOD OF DATA ANALYSIS**

Descriptive statistics is used to achieve objective i.Gross margin and Efficiency Analysis were used to realise objective (ii) and multiple regression was used to realise objective (iii)

**Model Specification**

**Gross marketing margin analysis**

This was used to determine the profit margin of cocoyam wholesale marketers and it is specified as follows:

Computing the gross marketing margin (GMM) was done by final price paid by the buyer and is expressed as percentage (Mendoza, 1995)

$$GMM = \frac{SP - PP}{SP} \times \frac{100}{1} \ldots\ldots\ldots\ldots\ldots..I$$

Where,

GMM = Gross marketing margin
SP = Selling`s price per bag (100kg) of cocoyam
PP = Purchase`s price per bag (100kg) of cocoyam
Net marketing analysis

The net marketing margin analysis was also estimated as follows

$$NM = GM - TMC \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..II$$

Where
NM = Net marketing margin
GM = Gross margin
TMC = Total marketing cost (TVC)

$$GM = TR - TVC \ldots\ldots\ldots\ldots\ldots\ldots\ldots..III$$

Where TR = Total revenue
        TVC = Total variable costs

**Marketing efficiency analysis**

To estimate marketing efficiency for cocoyam wholesalers, the shepherd index (SI), as developed by Shepherd (1965) technique, was used. Coefficient of marketing efficiency is the ratio of total cost of marketing to total revenue expressed in percentage term. It is specified as:

$$ME = \frac{TC}{TR} \times \frac{100}{1} \dots\dots\dots\dots\dots\dots\dots\dots. IV$$

Where

ME = Marketing efficiency

TC = Total marketing cost

TR = Total Revenue (total value of cocoyam sold) For a marketer to be efficient in marketing their cocoyam, ME $\geq$ 1, indicates efficiency and < 1 shows inefficiency (Longwel etal, 2016)

**Multiple Regression Analysis**

Four functional forms were estimated as follows:

NMM= f (AG, ME, FE, HS, SP, PP, SE) + e (implicit function)

Linear: NMM= a+$b_1$AG+$b_2$ME + $b_3$FE + $b_4$HS + $b_5$SP + $b_6$PP+ $b_7$SE + $e_i$

Exponential: InNMM = a + $b_1$AG + $b_2$ME + $b_3$FE + $b_4$HS + $b_5$SP + $b_6$PP + $b_7$SE + $e_i$

Semi-log NMM = a + $b_1$InAG + $b_2$InME + $b_3$InFE + $b_4$InHS + $b_5$InSP + $b_6$InPP + $b_7$InSE + ei

Double-log: InNMM = a + $b_1$InAG + $b_2$InME + $b_3$InFE + $b_4$InHS + $b_5$InSP + $b_6$InPP + $b_7$InSE +ei

Where:

NMM =Net Marketing Margin (₦)

AG = Age of the marketer (years)

ME= Marketing experience (years)

FE= Years of formal education (years)

HS= Household size (number of persons in household)

SP= Selling price of cocoyam (₦)

PP= Purchase price of cocoyam stock (₦)

GEN= Gender (dummy: female = 0, male = 1

α = constant

$b_1$ = parameters to be estimated

e = Error term

## RESULTS AND DISCUSSION

**Table 1: Distribution of the respondents according to socio-economic characteristics (N=216)**

| Variable | Frequency | % | Mean |
|---|---|---|---|
| **Gender** | | | |
| Male | 32 | 14.8 | |
| Female | 184 | 85.2 | |
| **Age (years)** | | | |
| 21-30 | 12 | 5.5 | |
| 31-40 | 40 | 18.5 | |
| 41-50 | 90 | 41.7 | 46.0 |
| 51- 60 | 66 | 30.6 | |
| 60 and above | 8 | 3.7 | |
| **Marital status** | | | |
| Single | 10 | 4.6 | |
| Married | 174 | 80.6 | |
| Widow | 18 | 8.3 | |
| Separated/Divorce | 14 | 6.5 | |
| **Educational level** | | | |
| No formal education | 18 | 8.3 | |
| Primary | 60 | 27.8 | |
| Secondary | 98 | 45.4 | |
| Tertiary | 40 | 18.5 | |
| **Marketing experience** | | | |
| 1-10 | 68 | 31.5 | |
| 11-20 | 128 | 59.2 | 12 |
| 21 and above | 20 | 9.3 | |
| **Access to credit** | | | |
| Access to credit | 63 | 29.2 | |
| Otherwise | 153 | 70.8 | |
| **Household size** | | | |
| 1- 3 | 59 | 27.3 | |
| 4 – 6 | 108 | 50 | 5.0 |
| 7-10 | 35 | 16.2 | |
| 11and above | 14 | 6.5 | |
| **Membership of Marketing Association** | | | |
| Yes | 164 | 75.9 | |
| No | 52 | 24.1 | |
| **Marketing cost (naira)** | | | |
| 10,000-50,000 | 108 | 50 | |
| 51,000-90,000 | 76 | 35.2 | 40,000 |
| 90,000 and above | 32 | 14.8 | |

Source: field survey, 2022.

N = Number of Respondents, % = Percentage

**Marketing Margin and Marketing Efficiency of Wholesale Marketing of Cocoyam**
The results of data analysis on marketing margin and marketing efficiency of wholesale marketing of cocoyam indicated that total cost (TC), total revenue (TR), total variable cost (TVC), total fixed cost (TFC), total gross margin (TGM), gross margin, net marketing margin (NMM) and marketing efficiency are presented in Table 2. The study showed that, out of the total cost of ₦108,283,162.57 spent by the marketers, purchases constituted 83.77% while the least was land fee (0.02%). By this result, the cost of purchases appeared to be the most important cost in wholesale marketing of cocoyam. This agrees with Ozor (2018) who reported that cost of stock/purchases constituted 99.75% of the total cost of marketing and thus become the most important cost to consider in starting a business. The study revealed that marketers realized a total revenue of ₦128,629,450; total gross margin of ₦37,956,950, gross margin of ₦20,387,212 and net marketing margin of ₦2,817,524. The high gross margin indicates profitability. This concurs with Opata (2016), that what concerns every marketer is the level of marketing margin which determines profit. It is believed that the total income is high enough to take care of marketing cost and make profit. This agrees with Nwankwo (2014) who reported that a high marketing margin in agribusiness is a precondition for profit making. The efficiency coefficient value of 84% indicates a high level of efficiency. This could be attributed to the fact that majority of the marketers had spent not less than eleven year in the business thus must have gathered enough experience and been able to manage resource efficiently. This concurs with the findings of Ocholi et al (2017) who found a wholesale marketing of Potato in Benue State to be efficient.

**Table 2: Estimated monthly profitability of Wholesale marketing of cocoyam**

| Variable | Amount (N) | Percentage (%) |
|---|---|---|
| **Revenue** | 128,629,450 | |
| **Variable costs** | | |
| Cost of purchases/stock | 90,672,550 | 83.77 |
| Loading cost | 647,288 | 0.60 |
| Land fee | 16,900 | 0.02 |
| Daily levies/charges | 212,140 | 0.20 |
| Transportation cost | 4,795,110 | 4.43 |
| Transport cost to vending point | 207,250 | 0.19 |
| Workers' salaries | 1,612,100 | 1.49 |
| Storage cost | 244,500 | 0.23 |
| Cost of Jute bag | 1,255,900 | 1.16 |
| Association dues | 33,050 | 0.03 |
| Cost of recharge card cost | 472,250 | 0.44 |
| Cost of food and lodging **cost** | 3,424,150 | 3.16 |
| Produce levies | 1,636,950 | 1.51 |
| Physical loss and gift | 1,177,000 | 1.09 |
| Miscellaneous cost | 1,618,850 | 1.50 |

| Total Variable cost(TVC) | 108,242,238 | 100 |
|---|---|---|
| **Fixed Cost** | | |
| Dep.on annual Shop rent | 20,151.002 | 49.24 |
| Dep on.cost of Wheel barrow | 12500 | 30.54 |
| Dep. on cost of chair | 2,463.96 | 6.02 |
| Dep on cost of pan | 2,606 | 6.37 |
| Dep on cost of basket | 2799.48 | 6.83 |
| Dep cost of knife | 406.12 | 1.99 |
| **Total Fixed cost (TFC)** | **40,926.562** | **100** |
| **Total cost (TC=TVC+TFC)** | **108,283,164.57** | |
| Total Gross Margin(TGM) | 37,956,950 | |
| Gross Margin (GM) | 20,387,212 | |
| Net marketing margin (NMM) | 2,817,524 | |
| Marketing efficiency | 0.84 (84%) | |

**Source:** Field Survey 2022 Dep =depreciation; CP = cost of purchases/stock

**Influence of Respondents` Socio-Economic Characteristics on Marketing Margin**
The results of the influence of socio-economic variables of the respondents on the net marketing margin are presented in Table 3.3. Multiple regression was used to determine the effects of such socio-economic factors as age (AG), years of marketing experience (ME), household size (HS), selling price (SP), purchase price (PP), quantity of cocoyam sold (QS) and Gender of cocoyam marketers (GEN), on net marketing income. The data were fitted to four functional forms (linear, exponentials, semi-log and double-log). Output of the linear function was the best in terms of number of significant variables, values of F-statistic and $R^2$ adjusted. It was therefore chosen as the lead equation. The equation is given as:
MM = -121490 – 698.734AG + 1245.046ME – 1340.62FE – 2360.226HS + 40.354SP – 41.235PP + 3733.782QS + 6375.004SE

The $R^2$ value of 0.875 implied that 88% of variation in the net marketing income realized by the marketers was due to variations in the independent variables. The remaining 12% was as a result of stochastic noise. The F-value of 189.390 was statistically significant at 5% level of probability. This implied that socio-economic variables of the respondents together significantly influenced net marketing income, and that regression model was a good fit. A total of eight variables were included in the model and six (age, marketers` experience, years of formal education, selling price, purchase price and quantity of cocoyam sold) were statistically significant. Of the remaining two variables, household had negative but not significant, while sex had positive but had no significant effect on the net marketing income. The coefficient of age was significant at 5% level of significance but negatively related to net marketing. This implies that as marketers get older, they tend to lose out of business because of age and the tedious nature of the business. This agrees with

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Ayawari (2016) who reported old age as a limiting factor to profit making. Years of formal education was negatively signed with significant effect on the net marketing income. This implies that the marketing system such as lack of standardised measurement, tend to reduce their profit. This agrees with Ajie et al (2012), Nwankwo (2014) and Ayawari, (2016) who reported that education had negative relationship with net marketing income. The coefficient of marketing experience had positive relationship with net marketing income. This implies that the higher the marketing experience, the high the wealth of business intrigues and resource management skills, and the higher the likelihood to make more profit. This is in line with Abiodu et al, (2016) and Ozor (2018) but disagree with Nwankwo (2014) that marketers experience had no relationship with profitability. The coefficients of selling price had positive relationship with marketing margin. This implies that the higher the selling price, the higher the marketing margin. Purchases which constitute major part of marketing costs was significantly and negatively related to net marketing income. This implies that increase in the cost of purchases will reduce net marketing income and consequently reduce profit. This result disagrees with Ugwumba et. al., (2014) that reported a positive relationship between cost of stock and net marketing income but agrees with Ozor (2018) who reported that cost of purchase is a very significant factor in determining profit enterprise. The quantity of cocoyam sold has positive relationship with net marketing income. This implies that the marketers tried to sell as much quantity as possible. This is because the rate of turnover determines the margin and consequently profit.

**Table 3: Determinants of Marketing margin of the cocoyam wholeselers**

| Variables | Linear | Semi-log | Double-log | Exponential |
|---|---|---|---|---|
| | Coefficient | Coefficient | Coefficient | Coefficient |
| Constant | -121490 (-5.074) | -1063524 (-9.208) | -1.103 (-1.318) | -2.541 (-1.318) |
| AG | -698.734 (-1.613)* | -100327 (-1.854)* | -0.654 (-1.667)* | -0.654 (-1.667)* |
| ME | 1245.046 (1.818)* | -7132.398 (-0.357) | -0.051 (-0.355) | -0.051 (-0.355) |
| FE | -1340.62 (-2.02)* | -22070.3 (-2.826)* | 0.019 (0.335) | 0.019 (0.335) |
| HS | -2360.226 (-1.266) | -21782.5 (-0.972) | 0.009 (0.054) | 0.009 (0.054) |
| SP | 40.354 (20.666)* | 1024581 (19.408)* | 4.280 (11.190)* | 4.280 (11.190)* |
| PP | -41.235 (-16.67)* | -858253 (-16.748)* | -3.202 (-8.623)* | -3.202 (-8.623)* |
| QS | 3733.782 (27.896)* | 381111.0 (26.193)* | 1.497 (14.200)* | 1.497 (14.200)* |
| Gen | 6375.004 | NA | NA | NA |

| | (0.894) | (NA) | (NA) | (NA) |
|---|---|---|---|---|
| **Adj. R$^2$** | 0.875 | 0.848 | 0.645 | 0.645 |
| **F – Stat.** | 189.390 | 172.922 | 56.744 | 56.744 |
| **D-W Stat.** | 1.702 | 1.767 | 1.824 | 2.098 |
| **d.f.** | 216 – 9 = 207 | 216 – 8 = 208 | 216 – 8 = 208 | 216 – 8 = 208 |

**Source:** Field survey, 2022. Note: NA – Not available.$^{*}$= significant at 5% level

## CONCLUSION AND RECOMMENDATION

Evidently the study revealed that marketing margin reduces with increase in marketing costs. As bulk of cocoyam moves from one region to the other or from rural areas (production site) to the urban areas (retailers/consumers site), it incurred certain costs such as transportation, loading and offloading, market levies, assembling, sorting, storage costs etc. Other unplanned costs such as road barriers, vehicle break down, inability of marketers to meet up with the designated market days, can result to costs as a result of delay which can cause waste or postharvest loss. These perhaps accounted for some level of inefficiency recorded in the cocoyam wholesale marketing.

Socioeconomic variable such age (AG), years of marketing experience (ME), household size (HS), selling price (SP), purchase price (PP), quantity of cocoyam sold (QS) and Gender of cocoyam marketers (GEN), were found to influence net marketing margin. It is recommended that Government should provide good road network to ease the sufferings of marketers on the road. Marketers should form cooperatives; jointly they can solve some of their problems such as illegal and incessant levy collections.

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