DETERMINANTS OF NET MARKETING INCOME OF DRY MAIZE (ZEA MAYS) IN ENUGU STATE, NIGERIA.

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ABSTRACT
The study examined the determinant factors of net marketing income of dry maize (*zea mays*) in Enugu state of Nigeria. Specifically, it described profitability of dry maize marketing, determinant factors of net marketing income as wells as constraints faced by the dry maize marketers in the study area. Multistage, purposive and random sampling method were employed to select five (5) LGAs, (1) one market from each of the selected LGA, (10) ten wholesalers and (20) twenty retailers from the selected markets making a total of 150 respondents for the study. Enterprise Budgeting and Multiple regressions were the analytical tools employed. 4-point likert scale was used to find out the constraints faced by the marketers. Profitability indicators such as net marketing income, return on investment, net return on investment were ₦11,489,409.85, 1.5 and 0.5 for wholesalers of dry white maize N9,511,009.85, 1.6 and 0.6 for wholesalers of dry yellow maize; while N8,214,249.4, 1.6 and 0.6 were for retailers of dry white maize and N8,905,392.4, 1.8 and 0.8 for retailers of dry yellow maize respectively. These proved the business profitable. Socio –economic characteristics factors of the respondent's especially marketing cost and product price statically and significantly influenced net marketing income realized by pooled wholesalers and retailers, wholesalers and retailers of white and yellow maize at each instance. Constraints to dry maize marketing were high cost of transportation, inadequate capital, storage pests and diseases, high market levy, unstable prices, poor storage facilities, too many traders, inadequate market information and poor sales. The dry maize marketers should form cooperative societies to enable them transact the business at minimal cost and earn higher profit.

INTRODUCTION

Maize (*Zea mays*), known in many English-speaking countries as corn, is a grain domesticated by indigenous peoples in Mesomari (Bulgaria) in prehistoric times. It is the most widely grown grain crop in the Americas with 322 million metric tonnes grown annually in USA alone (Raouf, 2011). It is an annual plant belonging to the grass family (*gramineae)* (Oluwatoyin, 2013). According to Visent and Asher (2015), maize is a cereal crop that is grown throughout the world in a range of agro-ecological environments. It was introduced into Africa in the 1500s and has become one of the Africa's dominant food crops. Like in many other regions, it is consumed as a vegetable, although it is a grain crop (Singh, Yadaw and Sharma 2012. It is the most widely grown grain crop in the America with 322 million metric tonnes grown annually in USA alone (Raouf, 2011, Ozor, Nkamigbo and Chiekezie, 2019). In 2013 Nigeria produced close to 8 million metric tons making it the largest producer in Africa (Adams, 2018). In Nigeria, maize is a very important staple food crops. It is predominantly used as a separate food in the diet of urban and rural inhabitants. It also has vast commercial and industrial uses by agro-based industries through its processing and transformation into corn flakes, flour, baby foods, confectionaries, starch and livestock feeds and other products (Nkamigbo, Atiri, Gbughemobi and Obiekwe, 2015). Maize is equally useful in alternative medicine, chemicals, bio fuel, and ornamentals. It is a major source of cooking oil (Corn oil) and gluten. Maize starch can be hydrolyzed and enzymatically treated to produce syrups, particularly high fructose corn-syrup, a sweater, and also fermented and distilled to produce grain alcohol for whiskey production and as the starch source for beer Isibor, ., Nkamigbo,. Okonkwo, Kate.& Adejoh, (2024).. It is equally used for the production of dough ball and fish bait Nkamigbo et al . (2018). Maize grains are rich in vitamins A, C and E, carbohydrates, and essential minerals, contain 9% protein and also rich in dietary fibre and calories which are good source of energy (Mboyal, 2011 and Nkamigbo et al , 2018). Maize is a vital food crop cultivated in most parts of the world, especially low- and middleincome countries (LMICs). Globally, it is the third most grown cereal crop that serves as the primary source of food to more than one billion people (International Institute of Tropical Agriculture (IITA), 2019). It provides a staple food, and being used as a source of income for many population in the developing countries. The way maize is processed and consumed greatly varies from country to country, with maize flour and meal being the most popular products. It is an important source of carbohydrate for human diets in developing countries and for animal feed in the developed world (Undie, Uwah and Attoe, 2012).

Marketing involves all processes in the movement of products that consumers need from the point of production to the point of purchase. Marketing is concerned with all stages of operation which facilitate the movement of commodities from the farm to the consumers (Isibor, Nkamigbo and Ekeke, 2021). Marketing has economic value because it gives form, time and place utility (Asogwa and Okwoche, 2012 and Nkamigbo, Ugwumba and Okeke, 2019 Agricultural marketing is a form of marketing that encompasses all goods and services related to agriculture. These products will directly or indirectly support the effort to produce and deliver agricultural products from the farm to the consumer. It is the performance of all business activities involved in the movement of agricultural commodities from the point of production to consumers yard (Adeleye, 2008). It helps the producer such as the farmer and the middlemen to earn income with which they purchase other useful goods and services (Ebe, 2007; Ofoedu, 2014)

Dry maize marketing itself, is concerned with all the operation that aid movement of the product from the producer to the final consumer. They include assemblage, storage, transportation, grading and financing. They take place in homes, road sides, local/periodic market centres. They can be both wholesale and retail types in both rural and urban markets (Nwauwa, 2012). Generally, most of the commercial quantities of dry maize in Nigeria are transported from the supply regions of Northern Nigerian. Prices of dry maize are largely affected by transportation costs. After drying the maize, they are put in bags weighing about 100kg each. Wholesalers buy directly from the suppliers and sell to the retailers and consumers. Quantities sold to the retailers and consumers are most of the times measured in buckets weighing about 8-10kg. Some of the consumers also buy in cigarette cups. Major distribution points for dry maize ranges from producer points, wholesale markets and retail markets. Each of these markets especially wholesale and retail markets are characterized by activities of trading associations or unions which do not permit free entry into the business of dry maize marketing. This compels distributors to register with some amounts of money to join the union in addition to buying cola and beer for the union members before being allowed to sell their goods from their locations. Thus, the members fix prices through the union and force members to sell at those prices (Nwauwa, 2012). It is against this background that this paper addresses the following objectives; estimate the profitability of dry maize marketing by the intermediaries, determine the influence of respondents' socio-economic factors on net marketing incomes realized by the intermediaries; and identify the constraints to dry maize marketing in the area.

METHODOLOGY

The study area is Enugu State. According to Ukwu *et al,* (1988), Enugu state is located in the South-eastern region of Nigeria between latitude 50 55l and 70 10l N and longitude 60 501 and 70 55l E. The state is predominantly occupied by the Igbo ethnic group with an area of approximately 7,161km2 with a population of over 3.3 million according to

2006 population census (NPC, 2006). The state shares borders with Abia state and Imo State to the South, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Anambra State to the west. Economically, the state is predominantly rural and agrarian with a substantial proportion of its working population engaged in farming, although trading and services are also important. In the urban areas trading is the dominant occupation, followed by services. Coal is the main mineral deposit found in the State. Others include Limestone, iron ore, crude oil, natural gas and bauxite (Adeyemi, 2011). The study population comprised all dry maize marketers in Enugu State of Nigeria. Multistage, purposive and random sampling methods were used to select five (5) LGAs, (1) one market from each of the selected LGA, (10) ten wholesalers and (20) twenty retailers from the selected markets making a total of 150 respondents for the study. In stage one, (5) five local government areas were purposely selected, stage two involved the selection of (1) one big market from the selected local government area. Stage three involved the selection of 10 wholesalers and 20 Retailers from each of the selected markets, making a total of 150 respondents for the study. Data were collected from primary source. Primary data were obtained by using pre-tested questionnaire administered to the respondents by personal interview. 150 copies of the structured questionnaire were administered and well completed and useful for data collation. Data were collected on socio-economic characteristics of the respondents such as age, gender, marital status, household size, educational level, marketing experience etc. Additional data were collected on revenue and costs variables, product price, as well as constraints to dry maize marketing in the area. The following techniques were used to achieve the study objectives. Objective1, the Profitability of dry maize marketing was achieved using budgetary method. Objective 2, the influence of respondent's socio-economic factors on net marketing income was realized using the multiple regression analysis, while objective 3 the constraints to dry maize marketing was realized using the liket scale.

The budgetary technique used to determine the profitability of dry maize marketing. (Ugwumba $et. al.$, 2012) is expressed as:

$$NMI = \sum_{i=1}^{n} P_{yi}Y_i - \left(\sum_{k=0}^{n} P_{xij}X_{ij} + \sum_{i-1}^{r} F_{ij} \right)$$

Where:
NMI/Profit = Net Marketing Income /Profit
$\sum$ = Sum
PyjYj = Unit price x quantity of jth respondent's sales = total revenue (TR) for jth respondent.
PxijYij = Prices x quantities of jth respondent's variable inputs = total variable cost (TVC) for jth respondent.
Fij = Depreciation values of equipment, annual rent for store, interest on loan, e.t.c. for jth respondent = Total fixed cost (TFC) for jth respondent.
TC = Total cast (TVC + TFC).

The multiple regression model used to determine the influence of socio-economic factors of the respondent namely age represented by (AGE), gender (GEN), marital status (MAS), household size (HOS), marketing experience (EXP), educational status (EDU), marketing cost (MKC). Product price (PDP) and type of intermediary (TOI) on net marketing income is given as:
NMI = f (AGE, GEN, MAS, HOS, EXP, EDU, MKC, PDP, TOI + e)
Where:
NMI   =   Net marketing income (₦)
AGE   =   Marketer's age in years
GEN   =   Marketer's gender (dummy: male = 1; female = 2)
MAS   =   Marketers' marital status (dummy: married = 1; otherwise = 2)
HOS   =   Household size (number of persons in the household)
EXP   =   Marketers' experience in years
EDU   =   Marketers' education (years of schooling obtained)
MKC   =   Marketing cost (₦)
PDP   =   Product price (₦)
TOI   =   Type of intermediary (dummy: wholesaler = 1; retailer = 2)
e   =   Stochastic error term.

Four functional forms of the regression model (linear, exponential, semi-log and double-log) were tried with data on socio-economic factors and net marketing income of the marketers. Output of the form with best result according to econometric *a priori* criteria was adopted as the lead equation. The explicit versions of the functional forms are stated as:
Linear: NMI = βo + β1AGE + β2GEN + β3MAS + β4HOS + β5EXP + β6EDU + β7MKC + β8PDP + β9TOI + ei
Exponential: In NMI =βo + β1AGE + β2GEN + β3MAS + β4HOS + β5EXP + β6EDU + β7MKC + β8PDP + β9TOI + ei
Semi-log: NMI =βo + β1InAGE + β2InGEN + β3InMAS + β4InHOS + β5InEXP + β6InEDU + β7InMKC + β8InPDP + β9InTOI + ei

Double log: In Nmi =βo + β1InAGE + β2InGEN + β3InMAS + β4InHOS + β5InEXP + β6InEDU + β7InMKC + β8InPDP+β9InTOI+ei

A 4-point Likert-type scale used in determining the degree of seriousness of the problem were ranked as follow
Very serious =4
Serious =3
Moderately Serious   =   2
Not Serious   =   1
Cut-off-point   = $\frac{4+3+2+1}{4}$ = $\frac{10}{4}$ = 2.5

To make inferential statement, the mean score were compared with the critical mean of 2.5. If the calculated mean of a problem is greater than the standard critical value, then, the problem is regarded as very serious

RESULTS AND DISCUSSIONS
PROFITABILITY OF DRY MAIZE MARKETING BY THE INTERMEDIARIES

Table 1:

PARAMETERS	Wholesale		Retailers	
	WM	YM	WM	YM
Total Revenue	32,412,100	24,381,000	20,139,800	9,330,914
Variable costs				
Purchases	19,542,400	13,489,700	11,499,830	9,999,801
Loading	231,927.5	231,927.5	112,450	112,450
Off-loading	89,325	89,325	50,015.5	50,015.5
Association dues	625	625	575	575
Transportation	697,600	697,600	80,495	80,495
Miscellaneous	9,625	9,625	5,950	5,950
Total variable cost (TVC)	20,571,502.5	14,518,802.5	11,749,315.5	0,249,286.5
Gross margin (TR-TVC)	11,840,597.5	9,862,197.5	8,390,484.5	9,081,627.5
Fixed cost (FC)				
Annual shop rent	306,206	306,206	120,101	120,101
Wheel barrow	745	745	24,174.1	24,174.1
Interest on Icon	39,875	39,875	28,205	28,205
L.G.A charges	4,361.65	4,361.65	3,755	3,755
Total fixed cost (TFC)	351,187.65	351,187.65	176,235.1	176,235.1
Total cost (TFC+TVC)	20,922,690.15	14,869,990.15	11,925,550.6	10,425,521.6
Net marketing income (GM-TFC)	11,489,409.85	9,511,009.85	8,214,249.4	8,905,392.4
Return on Investment TR/TC	1.5	1.6	1.6	1.8
Net Return on Investmer TMI/TC	0.5	0.6	0.6	0.8

The enterprise budgeting analysis was deployed to determine the profitability of marketing the dry white and yellow maize grains in the Southeast. Result of the analysis indicating total cost (TC), total revenue (TR), total variable cost (TVC), total fixed cost (TFC), gross margin (GM), net marketing income (NMI), mean net marketing income (MNMI), and net return on investment (NROI) is presented in Table 1.

For the wholesalers, white dry maize grains generated gross margin of ₦11,840,597.5 and net marketing income of ₦11,489,409.85 while yellow dry maize grains earned the marketers gross margin and net marketing income of ₦9,862,197.5 and ₦ 9,511,009.85 respectively. Further result of the analysis recorded net return on investment of 1.5 for dry white maize and 1.6 for dry yellow maize. This meant that the two types returned ₦0.5 and 0.6 for every ₦1.00 spent by the marketers during the marketing period. By implication, the two maize types produced positive net returns on investment for the market to make dry maize marketing profitable business in the area. Further result of the analysis

as recorded on the retail side (Table 1), generated gross margin of ₦8,390,484.5 and net marketing income of ₦8,214,249.4 for dry white maize grains retailers, while dry yellow maize grains earned the retailers gross margin and net marketing income of ₦9,081,627.5 and ₦8,905,392.4respectively Further result recorded net return on investment of 1.6 for dry white maize grains and 0.8for dry yellow maize grains, meaning that the dry white maize returned ₦0.6 for every ₦1.00 spent while dry yellow maize grains earned the retailers ₦0.8 for every ₦1.00 spent. By implication, the marketing of dry yellow or white maize grains was profitable. However, dry yellow maize grains returned more net marketing income than dry white maize grains for the retailers. The reason could be that most of the consumers who made purchases directly from the retailers preferred dry yellow maize grains to the white ones. Studies by Obasi *et al* (2012) attested to the good profits earned by dry maize marketers in Imo, Adamawa and Abia State respectivel

INFLUENCE OF RESPONDENTS' SOCIO-ECONOMIC FACTORS ON NET MARKETING INCOMES REALIZED BY THE INTERMEDIARIES

Table 2: Determinants of net marketing income realized by wholesalers of yellow maize

Predicator	Linear	Exponential	Semi-log	Double-log
Constant	-231539	5.1032	84885	12.693
	(-0.25)	(9.26)	(0.01)	(3.43)
AGE	13075	-0.01031	1251422	-1.168
	(0.76)	(-1.00)	(0.69)	(-1.08)
GEN	-252314	-0.0126	-91459	0.00987
	(-0.78)	(-0.07)	(-0.85)	(0.15)
MAS	773921	0.5058	256862	0.16771
	(1.98)**	(2.16)**	(1.93)*	(2.10**)
HOS	-181255	0.07413	-1789389	-0.7531
	(-2.23)**	(-1.53)	(-1.88)*	(1.32)
EXP	35323	0.02095	875909	0.4568
	(2.04)**	(1.99)**	(1.49)	(1.29)
EDU	38091	0.02734	782476	0.5241
	(0.75)	(0.90)	(0.79)	(0.88)
MKCyel	0.3150	0.00000015	509608	0.1212
	(1..28)	(1.02)	(1.52)	(0.60)
PDPyel	-7.31	-0.00001312	-1124736	-1.6080
	(-0.71)	(-2.13)**	(-0.99)	(-2.37)**
TOI	-61876	0.0652	-82175	0.01588
	(-0.16)	(0.28)	(-0.56)	(0.18)
R2	55.4%	58.4%	52.6%	53.5%
R2(adj)	53.4%	56.2%	50.3%	51.6%
F-statistic	2.63	3.63	2.43	2.73
D-w.statistic	1.70	1.57	1.66	1.74

Source: survey data, 2024. Note: D-w.statistic = Durbin-Watson statistic. *** = $p \leq 0.10$, ** = $P \leq 0.05$, * = $P \leq 0.01$.

Table 2 revealed output of the exponential model as the lead equation. The coefficient of multiple determination (R^2) 58.4% meant that 58.4% of the variation in the profit of the wholesalers was explained by the variations in the independent variables while the remaining 41.6% was due to error. The F-statistic value of 3.63% was significant and confirms the overall significance of the regression analysis. The regression equation is given as: NMIiym = 5.10 – 0.0103 AGE – 0.013 GEN + 0.506 MAS – 0.0741 HOS + 0.0206 EXP + 00273 EDU + 0.000000 MKCyel – 0.000013 PPPyel + 0.065 TOI.

The coefficient of marketing experience of the wholesalers was significant and exerted positive influence on net marketing income at 5% alpha level. This is in line with a priori expectations and implied that the more experienced the wholesalers were, the more efficient and effective in resource management, hence were likely to realize more net marketing income than the less experienced wholesalers. This finding conforms to Isibor *et. al* (2024) that years of experience reduce marketers' inefficiency and thus increase productivity and income. The coefficient of marital status was positive and statically significant at 5% level of probability. This implied that married wholesalers were likely to organize and save more money, made more purchases and more turnovers, and thus realized more profit. This finding disagrees with that of Okwuokenye and Onemolease (2011) which reported a negative but significant relationship between marital status and net marketing income. However, it agrees with Olawatoyin (2013), who recorded a positive and significant effect of marital status on profit. Product price had a negative relationship with net marketing income according to *a priori* expectation. This relationship was statistically significant at 5% level of probability. This means that a decrease in price of the products will affect net marketing income positively as many marketers will be willing to buy more stocks which are likely to be sold at higher prices for better profit. The result is in conformity with that of Ugwumba (2009) who recorded a positive relationship between product price and net mar

Table 3 Determinants of net marketing income realized by wholesalers of white maize

Predicator	Linear	Exponential	Semi-log	Double-log
Constant	5.2693	5.2693	6156563	12.131
	(6.43)	(6.43)	(0.18)	(2.04)
AGE	0.001866	0.001866	7470527	-0.131
	(0.19)	(0.19)	(1.29)	(-0.13)
GEN	-0.1488	-0.1488	-369474	-0.04988
	(-0.82)	(-0.82)	(-1.68)*	(-0.83)
MAS	-0.0812	-0.0812	260148	-0.00840
	(-0.36)	(-0.36)	(0.61)	(-0.11)
HOS	0.001330	0.01330	-4146861	-0.1870
	(0.29)	(0.29)	(-1.75)*	(-0.35)
EXP	0.01086	0.01086	2351756	0.3662
	(1.07)	(1.07)	(1.23)	(1.09)
EDU	0.02073	0.2073	-3168588	0.4086
	(0.71)	(0.71)	(-1.00)	(0.74)
MKCwh	0.00000003	0.00000003	30503	0.2981
	(-1.05)	(-1.05)	(0.03)	(1.69)*
PPwht	0.00006476	-0.00006476	-3439710	-2.264
	(-1.36)	(-1.86)*	(-0.45)	(-1.87)*
TOI	0.1967	0.1967	129221	0.01057
	(0.90)	(0.90)	(0.29)	(0.13)
R2	52.6%	55.2%	53.8%	57.4%
R2(adj)	51.3%	53.7%	50.6%	55.8%
F-statistic	2.99	3.12	1.22	2.89
D-w.statistic	1.62	1.62	1.91	1.60

Source: Survey data, 2024. Note: D-W.statistic = Durbin-Watson statistic. * = $p \leq 0.10$

The determinants of net marketing income realized by the wholesalers of white maize were best represented by output of the double-log form (Table 3). This is because, it gave the best result in terms of sizes of the significance variables, values of F-statistic, R2 and R2 adjusted. Result of the regression analysis indicated that, out of the nine independent variables included in the model, only two variables, marketing cost and product price were significant at 10% level. Others, (age, gender, marital status, household size, experience, educational level and type of intermediary) were not significant. The regression equation is given as: NMIwh = 12.13 – 0.131 AGE – 0.0499 GEN – 0.0084 MAS – 0.187 HOS + 0.366 EXP + 0.409 EDU + 0.298 MKCwh – 2.26 PDPwht + 0.0106 TOI.

The coefficient of marketing cost was positive and significant at 10% level of probability. This is contrary to *a priori* expectation, but implied that wholesalers who had their marketing costs increased by increasing their investment in the business earned higher profits as a result of the action. This is in agreement with the findings of Ugwumba and Onwuemedo (2014) that reported positive relationship between net marketing income and marketing cost. Product price was negative and significant at 10% level of probability, in accordance *with a priori* expectation. This meant that the wholesalers of white maize who purchased the product at higher prices had their marketing cost increased and consequently earned low net marketing income. High price of product could lead to consumers diverting to cheaper alternatives and reduction of turnover and profit realized by the marketers. The R2 value of 57.4% implied that 57.4% of the variation in net marketing income realized by the marketers was due to variations in the exogenous variables while the remaining 42.6% was as a result of stochastic error. The F-statistic value of 2.89 was significant at 5% level of probability. This indicated that the socio economic variables significantly influenced net marketing income and that the regression model was a good fit.

Table 4 : Determinants of net marketing income realized by the retailers of yellow maize

Predicator	Linear	Exponential	Semi-log	Double-log
Constant	129754	5.0632	1827865	10.370
	(0.64)	(12.73)	(1.20)	(3.52)
AGE	2698	0.002353	357529	0.5102
	(0.94)	(0.42)	(1.76)*	(0.92)
GEN	49419	0.13152	17008	0.04647
	(1.71)*	(1.76)*	(1.04)	(1.67)*
MAS	11090	0.0515	781	0.01201
	(0.21)	(0.50)	(0.04)	(0.35)
HOS	-491	-0.00596	23278	-0.1132
	(-0.05)	(0.29)	(0.18)	(-0.44)
EXP	797	0.000650	-43737	-0.0407
	(0.20)	(0.08)	(-3.39)	(-0.19)
EDU	7288	0.00632	19865	0.06700

	(1.09)	(0.48)	(0.59)	(1.03)
MKCyell	-0.00551	0.00000001	33676	0.1986
	(-0.20)	(0.18)	(0.57)	(1.75)*
PDPym	-15.759	0.00004701	-588289	-1.8082
	(-1.69)*	(-2.41)*	(1.66)***	(-2.63)**
TOI	5106	0.0733	-11307	-0.02114
	(0.06)	(0.43)	(-0.35)	(-0.34)
R2	53.1%	56.8%	55.6%	61.4%
R2(adj)	50.0%	53.0%	54.1%	60.1%
F-statistic	2.89	2.51	2.92	2.99
D-w.statistic	2.06	1.93	2.09	2.01

Source: Survey data, 2024. Note: D-w.statistic = Durbin-Watson statistic. *** = p≤ 0.10. ** = P≤ 0.05

The multiple regression analysis was also used to determine the effects of respondents' socio economic factors on net marketing income realized by the retailers of yellow maize. Output of the double-log form (Table 4) was chosen as the lead equation, because it was the best in terms of number of significant variables as well as higher values of F-statistic, R2 and R2 adjusted. The equation is given as: NMIym = 10.4 + 0.510 AGE + 0.0405 GEN + 0.0120 MAS – 0.113 HOS – 0.041 EXP + 0.0670 EDU + 0.199 MKCym – 1.81 PPym - 0.0211 TOI

The R2 value of 61.4% implied that 61.4% of the variation in net marketing income realized by the marketers was due to variation in the exogenous variables while the rest 38.6% was as a result of stochastic error. The F-statistic value of 2.99 was statistically significant at 5% level of probability. This indicated that the socio economic variables together significantly influenced net marketing income and that the regression model was a good fit.

Out of the nine regressors (exogenous variables) imputed in the model, three (gender, marketing cost, and product price) exerted significant influences on net marketing income realized by retailers of yellow maize; another three factors (household size, experience and type of intermediary had negative but not significance effect on net marketing income. While the remaining three (age, marital status and educational level) exerted positive but not significant effect on net marketing income of retailer of yellow maize.

The coefficient of gender was significant and positive at 10% probability level. This implied that, with adequate knowledge and experience, the female marketers were likely better marketers of yellow maize at the retail level.

Marketing cost exerted positive and statistically significant effect on net marketing income realized by retailer of yellow maize at 10% alpha level. This is contrary to a priori expectation of negative relationship between marketing cost and profit. The result is in agreement with Onyenweaku (2010) who reported a positive and significant relationship between marketing income and marketing cost.

The coefficient of product price was significant and negative at 5% probability level. This is contrary a priori expectation of positive relationship between product selling price and net marketing income, and implied that the retailers of yellow maize who were able to sell the product at higher prices realized more profit than those who sold at lower prices. The higher the product price, the higher the supply, since sellers would want to benefit more from rising prices (Ugwumba et al., 2012

Table 5 : Determinants of net marketing income realized by the retailers of white maize

Predicator	Linear	Exponential	Semi-log	Double-log
Constant	422091	5.1697	2072577	5.907
	(0.51)	(10.87)	(0.31)	(1.57)
AGE	4006	-0.002323	423948	-0.1971
	(0.35)	(-0.36)	(0.39)	(-0.32)
GEN	36528	0.2180	15391	0.07909
	(0.91)	(1.95)*	(0.23)	(2.12)**
MAS	-60882	-0.0175	-20859	-0.00156
	(-0.29)	(-0.14)	(-0.29)	(-0.04)
HOS	-7144	-0.002954	-2963300	0.0279
	(-0.17)	(-1.49)	(0.30)	(-0.98)
EXP	-3602	0.002954	-296300	0.0279
	(-.23)	(0.33)	(-0.67)	(0.11)
EDU	7961	-0.00121	54035	-0.02445
	(0.30)	(-0.08)	(0.41)	(-0.33)
MKCwh	0.0987	0.00000025	118006	0.4510
	(0.67)	(2.94)**	(0.52)	(3.48)**
PDPwm	-25.47	-0.00002509	-635987	-0.7768
	(-0.51)	(-0.88)	(-0.41)	(-0.87)
TOI	360125	-0.2675	117565	-0.12206
	(1.98)	(-1.28)	(1.51)	(-1.06)
R2	52.0%	58.4%	53.1%	63.3%
R2(adj)	51.2%	56.4%	50.0%	57.7%

F-statistic	2.48	2.13	2.40	4.92
D-w.statistic	1.95	1.73	1.97	1.81

Source: Survey data, 2024. Note: D-w.statistic = Durbin-Watson statistic. * = $P \leq 0.01$, ** = $P \leq 0.05$, *** $P \leq 0.10$

The multiple regression analysis was also used to determine the effects of respondents socio-economic factors such as age represented by (AGE), gender (GEN), marital status (MAS), household size (HOS), experience (EXP), educational level (EDU), marketing cost (MKC), product price (PP), and type of intermediary (TOI) on net marketing income . The data were fitted into four functional forms (linear, exponential, semi-log and double-log) of the regression model. The result is shown in Table 4.15. Out of the four regression outputs, output of the double-log was chosen as the lead equation because it was the best in terms of values of R^2, R^2 adjusted and F-statistic. The regression equation is given:
NMIwht = 5.91 – 0.197 AGE + 0.0791 GEN – 0.0016 MAS – 0.295 HOS + 0.028 EXP – 0.0245 EDU + 0.451 MKCwh – 0.777 PPwht - 0.122 TOI.

The R^2 values of 63.3% implied that 63.3% of the variation in net marketing income realized by retailers of white maize was due to variations in the exogenous variables while the rest 36.7% was due to error. The F-statistic value of 4.92 was significant at 5% level of probability. Indicating that the predictors together exerted significant influence on the predictoned. Out of the nine regressors included in the model, two (gender and marketing cost) were significant while the rest (age, marital status, experience, educational level household size product price and type of intermediary) were not significant. The coefficient of gender was positive and significant at 5% probability level. This implied that the female retailers of white maize were better resource managers and thus realized more net marketing income than the males. It could also mean confirmation of the dominance of females at the retail level of the enterprise. Marketing cost of the retailers of white maize exerted positive and significant effect on profit contrary to *a priori* expectation. This implied that the retailers who invested more money in the business earned higher profit

CONSTRAINTS TO DRY MAIZE MARKETING

Table 6 : Problems of dry maize grain marketing by (Wholesalers) in the area

	Parameter	Mean score	Rank
A	**General marketing problems**		
	High cost of transport	2.86	1st
	Inadequate capital	2.63	2nd
	Storage/pest/diseases	2.60	3rd
	High market levy	2.55	4th
	Poor and unstable prices	2.50	5th
	Poor storage	2.50	5th
	Too many other traders	2.50	5th
	Inadequate market information	2.36	6th
	Poor sales	2.30	7th
B.	**Storage problems**		
	Storage losses (Weevils and pests)	2.75	1st
	High cost of storage	2.45	2nd
	Loss as a result of theft	2.17	3rd
	Inadequate storage facilities	1.80	4th
C.	**Transportation problems**		
	Poor/bad feeder roads	2.87	1st
	Inadequate transport facilities	2.77	2nd
	Bulkiness of goods	2.47	3rd
	High cost of transportation	3.10	4th
D.	**Selling problems**		
	Excessive price instability	2.76	1st
	High market levy	2.53	2nd
	Low returns	2.40	3rd
	Inadequate market information	2.33	4th
	Small number of buyers	2.00	5th
E.	**Buying problems**		
	Instability of prices	2.98	1st
	Lack of information about prices	2.13	2nd
	Adulteration of goods	2.04	3rd
	Long chain of distribution	2.03	4th

Source: Field Survey, 2024

The above table shows result of analysis of problems of dry maize marketing by the retailers. Poor and unstable prices and high market levy were the most serious marketing problems of the retailers with mean score of 2.71 each. The

second in rank was storage pests and diseases (M= 2.61), then too many other traders (M=2.55), inadequate capital (M=2.47,), high cost of transportation and poor storage facilities (M=2.40 in each case), inadequate market information (M= 2.36), and poor sales as the weakest problem (M=2.30). Ayoola and Azever (2010), Kwadzo and Scrofenyoh (2012), identified transportation problems, inadequate capital, and poor storage facilities as serious constraints to maize marketing in the different study areas. The general marketing problems were followed by inadequate storage facilities with mean score of 2.86. This could be attributed to the fact that most of the warehouse owners in the various markets were willing to rent their warehouse to wholesalers alone, because they could afford to pay better store rent than the retailers. This was closely followed by storage losses due to diseases and pests (M=2.73), loss as a result of theft (M=2.63) and high cost of storage, (M=2.57). Bulkiness of the product was noticed as the most serious constraints (M=2.86) in the transportation sector. This is because, many retailers transport their goods using motorcycles and tricycles which could carry few goods. This was closely followed by poor/bad feeder roads (M=2.63), high cost of transportation (M=2.43) and inadequate transport facilities (m=2.34). High market levy (M=2.79) was noticed as the most serious problem following transportation problem. This could be because of the existence of too many market masters operating in the markets. This was closely followed by excessive price instability (M=2.73), low returns (M=2.50) small number of buyers (M=2.47) and inadequate market information (M=2.43). Lastly instability of prices was closely followed by lack of information about prices, (M=2.18), long chain of distribution (M=2.30) and adulteration of goods (M=1.84) on the problems of buying the product.

Table 7: Problems of dry maize grain marketing by retailers in the area

	Parameter	Mean score	Rank
A	**General marketing problems**		
	Poor and unstable prices	2.71	1st
	High market levy	2.71	1st
	Storage/pest/diseases	2.61	2nd
	Too many other traders	2.55	3rd
	Inadequate capital	2.47	4th
	Poor storage	2.40	4th
	High cost of transport	2.40	5th
	Inadequate market information	2.36	6th
	Poor sales	2.30	7th
B.	**Storage problem**		
	Inadequate storage facilities	2.86	1st
	Storage losses (Weevils and Pest)	2.73	2nd
	Loss as a result of theft	2.63	3rd
	High cost of storage	2.57	4th
C.	**Transportation problems**		
	Bulkiness of goods	2.86	1st
	Poor/bad feeder roads	2.63	2nd
	High cost of transportation	2.43	4th
	Inadequate transport facilities	2.34	4th
D.	**Selling problems**		
	High market levy	2.79	1st
	Excessive price instability	2.73	2nd
	Low returns	2.50	3rd
	Small number of buyers	2.47	4th
	Inadequate market information	2.43	5th
E.	**Buying problems**		
	Instability of prices	2.91	1st
	Lack of information about prices	2.18	2nd
	Long chain of distribution	2.30	3rd
	Adulteration of goods	1.84	4th

Source: Field Survey, 2024

CONCLUSION

Dry maize grains marketing proved a profitable enterprise at both the wholesale and retail levels in Enugu state. The marketers were efficient in the business, though inefficiency gaps existed among the actors due to marketing constraints. Addressing the constraints identified by this study, especially the serious ones such as high cost transportation, inadequate capital, poor and unstable prices, and poor storage facilities through sound policy measures would improve marketing efficiency, profitability and overall welfare of the marketers

RECOMMENDATIONS

Based on the findings, the following recommendations were made;

i. Government should provide necessary transportation facilities such as good network of roads and mass transit vehicles so as to ameliorate the transportation problems of the marketers, improve marketing efficiency and net marketing income realized by the marketers.

ii. Government and other concerned agencies, should corporate in building marketing infrastructures, especially new model markets, stores, conveniences, borehole and refuse dumps in order to ensure good health of the marketers, reduce marketing cost and improve enterprise profitability.

iii. Government and financial institutions, especially the Agricultural Credit Schemes of the Central bank, should be strengthened to provide soft loans to dry maize marketers at a very low interest rate to make more fund available for the marketers to increase turnover, hence income.

iv. The dry maize grains marketers should form cooperative societies, which have proven to be the best way of obtaining subsidies, credit facilities and group contributory efforts

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