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Value Addition to Plantain by Women Entrepreneurs in Imo State, Nigeria

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Abstract
The study examined value addition to plantain by women who process it into plantain chips in southeast Nigeria. A three stage sampling technique was used to select the entrepreneurs in the area. The objectives of the study described the motivating factors of the entrepreneurs, identified and described the processes the plantain undergo to produce chips, determined the sources of startup capital, ascertained the level of net profit made at the end of production of plantain chips and sales of the product, determined the staff strength of the entrepreneurs, isolated the factors that influenced net profit and identified the constraints faced by these entrepreneurs. Eighty (80) plantain chip entrepreneurs were randomly selected from major selling points in the city. A well structured questionnaire was used to elicit information for this study. Entrepreneurs motivating factors, profit and source of startup capital were measured, using frequency counts, percentages, net profit analysis, and multiple regression analysis. The findings showed that the motivation factors were more of antecedent variables such as education, mentors, past experience and creativity than triggering variables such as unemployment, loss of jobs and loss of one's spouse. The enterprise employed an average of 4 workers for production and 6 sellers for distribution. The source of startup capital was from personal savings and loan from informal credit sources such as "isusu" clubs with a mean of ₦ 86,600.50 ($687.3) as startup capital. The business was profitable at net profit of ₦388, 173 ($2,488) per annum. Household size, cost of inputs such as cost of labor and packaging cost had a negative influence on the entrepreneurs' net profit. The venture created an average of four employment opportunities in the business. The constraints faced by the entrepreneurs were scarcity and high cost of raw materials, lack of training on budgeting, epileptic power supply, and unavailability of modern technology to enjoy economies of scale. This study recommends that soft loans, training in business (budgeting and planning) be given to the entrepreneurs as this will help them remain in business, expand and be employers of labor which will enhance economic development of the nation.
Keywords: women, entrepreneurs, processing, plantain, plantain chips

1. Introduction

Entrepreneurial ventures sometimes referred to as family owned business are known around the world as a major cradle of industrialization. They are characterized by limited access to capital, greater dependence on the use of local resources, easy of emergence and exit and high mortality rate (Aham, 1999). In Nigeria, financing of entrepreneurial ventures is very crucial as sources of finance open to entrepreneurs are many but not efficient due to bureaucracies in application, disbursement and collateral needed for credit. The sources open to these entrepreneurs are personal savings," isusu", friends and relatives (Onuoha, 1994).

Sustainability of entrepreneurial ventures is a function of many inter-related variables which include among others the vision and skill of the founder, her planning strategy, finance, management and ability to align with modern business practice (Ndugbu, 1999). In Nigeria however, factors which stimulate entrepreneurs' interest are increasing unemployment of graduates from Universities and other tertiary institutions and fewer vacancies in choice industries like oil and banking institutions. There is now a growing phenomenon of dual – income family structure due to economic challenges in the country: the result of this is the quest and desire by middle and low income earners to build wealth through entrepreneurship. The growing awareness, participation and relevance of women entrepreneurs in our society have had a positive influence on entrepreneurial activities (Chinonye, 2008).

According to Hay et. al., (2002), 286 million adults were active entrepreneurs and the average rate of entrepreneurship among women across Global Entrepreneurship Monitor (GEM) countries was 8.9%. In Nigeria, women play a major role in the marketing of plantain than men with the major motive of supplementing their family income since it is a profitable venture (Onyeka et. al., 2004; Fakayode et. al., 2011). Plantain (Musa spp) is ranked third among starchy staples in Nigeria and its production is concentrated in the southern part of the country. Production of plantain is male dominated while processing and marketing is essentially handled by women. Contributions of plantain to the income of urban households unlike some other starchy staples whose

demand tend to fall with rising income, demand for plantain increases with increasing income (Akinyemi et. al., 2008).

According to IITA (2013); Oladejo and Sanusi (2008), plantain provide food security and income for small scale farmers who represent the majority of producers. Plantain is rich in vitamin C, B6, minerals and dietary fiber with carbohydrates accounting for 32% of fruit weight. Plantain goes through the processes of washing the fruit, peeling, slicing, salting, frying, and packaging and tabling value is added through these various stages of production. kolter and Armstrong, 2010 opined that through these various processing activities value is created with the raw materials.

And in Nigeria, because of the rapidly increasing urbanization and the great demand for easy and convenient foods by the non -farming urban populations, plantain chips is a staple food for many people in humid regions, and favored snack for the people. Plantain chip production is a growing industry in Nigeria and is believed to be responsible for the high demand being experienced now in the country. Plantain as a seasonal crop with relatively short shelf life and high post harvest losses, processing increases its shelf life (Adewumi et. al., 2009; Ajayi and Mbah, 2007). Processing into one form or the other is necessary to make it accessible and available to customers all year round. It is for this motivation that the study set out to achieve through the following objectives;

1. describe motivational factors of the respondents,
2. identify and describe the processes the plantain fingers undergo to produce the chips,
3. determine the sources of startup capital for the business ,
4. ascertain the level of profit gained in the business,
5. determine the ability of entrepreneurs to create or generate employment opportunities,
6. isolate factors influencing the entrepreneurs net profit and
7. identify the constraints faced by the entrepreneurs in the value addition process by women in Imo state.

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2. Materials and Methods

The study was carried out in Imo State which is made up of 27 Local Government Areas and three zones namely Owerri, Okigwe and Orlu but Owerri zone that hosts the seat of Imo State Government was chosen for the study. Moreover, most of the sales of plantain chips are done within the zone due to the presence of the product consumers who are mainly Government workers and other non-government personnel who need readymade food in packages. The plantain chips are found being sold in shops and along the streets by hawkers in the area. The addresses of the entrepreneurs were obtained from the addresses on the labeled plantain chips and sellers were interviewed on sources of the unlabeled plantain chips in the market. From the addresses, a list of the plantain chips women entrepreneurs was generated and it gave us 115 women entrepreneurs which served as the sample frame for the study. A random sample of 80 respondent plantain chip women entrepreneurs was made and used for further analysis.

Data were collected from secondary information sources such as books, journals and periodicals for corroborating or denying the research findings. The primary data was collected with a well structured questionnaire and personal observations. Data collected include socio economic factors, motivating the entrepreneurs , technology or processes of production of plantain chips, cost of production, quantity produced per bunch of plantain, source of startup capital, number of employment generated from the business, net profit and constraints faced in the business . Analytical tools employed includes descriptive statistics such mean, percentages, bar charts, cost and return analysis and multiple regression analysis.
The cost and return analysis is stated as follows;

$NR = TR - TC\ (TVC+TFC)$ ----------eqn 1

Where
NR= Net Returns
TR= Total Revenue
TVC = Total variable costs
TFC = Total fixed costs

The multiple regression model is implicitly specified as;

$Y = f(X_1, X_2, X_3, X_4, X_5, X_{6, e})$----------eqn 2

Where Y = Net returns/ profit (₦)
X_1 = Age (years)
X_2 = Cost of inputs (₦)
X_3 = experience in business (years)
X_4 = Startup capital (₦)
X_5 = Education (yrs)
X_6 = Household size (No of persons)
e = Error term
It is expected a priori that the coefficients for
$X_1, X_2, X_6 > 0$; $X_5, X_3, X_4 < 0$
The four functional forms were tested and the best fit based on the value of the R^2, F – value and number of significant variables was chosen.

3. Results and Discussion

Table 1 showed that 40% of the respondents are in the age bracket of 31-40 years. This is followed by those in the age bracket of 41-50 years (32%) and 25-30 years (28%). Considering the result above, the mean age is 35years, which imply their capability to engage in plantain processing and marketing business appears physically adequate since majority of the entrepreneurs are still physically active and are productive to carry out the required operations in plantain chips production.

The result in Table 2 indicates that 67.50% of the entrepreneurs were married women while 32.5% were single. This means that the business is not only for the married who may have many mouths to feed it is also a source of employment to the increasing population of unemployed youths since the white collar jobs are limited. However, the husbands/males only come into processing of agricultural products when there is increase in commercialization and mechanization (Adebayo et. al., 2008).

Table 3 shows that the entrepreneurs had large family size with a mean of 6 persons in a household which imply that there are a lot of responsibilities in the home and this will invariably affect the income of the entrepreneurs. Only a small number had household size of less than 5 persons which could be attributed to the number of unmarried youths engaged in the venture.

Table 4 shows that 30% of the entrepreneurs were primary school certificate holders, while 1.25% attended tertiary institutions. However, majority (68.75%) were secondary school certificate holders. The computed mean was 8 years suggesting that they had at least two years secondary education. In agriculture, the minimum literacy level is secondary education which further implies that most of the plantain processors/marketers were literate and could be trained or advised on latest technology, budgeting and record keeping through seminars and this will help them to adopt certain changes tailored towards the improvement of processing and marketing strategies of their products.

It was observed that the entrepreneurs engaged in other economic activities that is money yielding. The result in Table 5 indicates that 25% of the respondents were fulltime farmers. This may be attributed to their low literacy level and lack of job opportunities that propelled them to be entrepreneurs. A larger proportion of the entrepreneurs (72.5%) were traders while only a negligible proportion of the entrepreneurs (2.5%) were civil servants. This implies that majority of the entrepreneurs see plantain processing into plantain chips production and marketing as a secondary occupation since most of them are full time traders. The civil servants were engaged in the venture to supplement income to take care of family needs.

Table 6 shows that 65% of the respondents have between 1-5 years of experience, 18.75% had between 6-10 years of experience in plantain while 16.25% of the respondents had 11-15 years of experience in chips production. The computed mean for the years of experience was 5.6 years. This shows that the entrepreneurs had considerable years of experience and have spent a long period of time in plantain chip production and marketing, thus can predict possible problems and likely solutions that result in higher income with regards to the enterprise.

The factors that motivated the women to be entrepreneurs are numerous but the most are the antecedent factors such as having some past experiences/ training by church organizations, government poverty alleviation programs or by some Non-governmental Organizations (26.05%) on such money making ventures, having mentors who have been successful in the business (16.81%), being educated (15.13%) and being creative (13.45%). Some factors like the triggering factors that one would have expected to motivate women such as unemployment, loss of job and loss of spouse are not motivational in this part of the world. The issue of dual income family structure where the women do other jobs because of the economic challenges facing families

propels the desire to build income through entrepreneurship.
Deep-fried chips (crisps) were prepared according to the procedures described by Adeniji (2005) and Yomeni et. al.,(2004). Bunches are harvested at green stage and de-handed prior to de-fingering of representative fingers from the second hand from the proximal end of the bunch following Baiyeri and Ortiz (2000) recommendation. Fruits were washed to remove dirt and latex and then carefully hand peeled with the aid of stainless kitchen knife and the resultant pulps were immersed in water until the peeling is completed to prevent browning. Pulps were removed into a clean bowl and seasoned with salt. The salted fruits were sliced disc-wise directly into a pre-heated vegetable oil in an electric fryer, Lincat Model LDF, series 9418072, Lincat Ltd., Lincoln, England at 190oC. Slicing was done with the aid of Plantain Slicer, SF923-1, CEE Square Ltd., Leawood Blvd, Houston, Texas, USA. Slices were stirred constantly during frying until crisp bright yellow (in case of plantain) or cream to pale yellow (in case of banana) chips was obtained. Chips were scooped into an aluminium plastic sieve and properly drained to remove excess oil, and then spread on \ polyethylene bag and allowed to cool at room temperature before packing into a heat sealed polyethylene bag.

The plantain is prepared in many ways but the plantain chip (which can be made with the ripe or unripe) is very interesting and easy to make with just few inputs. At every stage of this technology, value is added to the raw fingers since plantain is perishable and has short shelf life. The value added to plantain through processing increase its shelf life since there is lack of storage facilities and this reduces post harvest loses. The salt water is meant to give it taste and also for preservation. Vegetable oil is the recommended oil for chips production. This snack is nutritious, delicious, cheap and serve workers who can't go home to eat lunch due to their busy schedules. The final product is packaged, labeled and taken to stores or sold on the streets.
The female entrepreneurs studied accessed funds from different informal sources as shown in Table 8 which were detrimental to the business due to interest charged. The entrepreneurs saved to raise startup capital (45%) and majority of them (76.25%) borrowed from indigenous informal institutions where they were able to have a surety who knows them from home in fear of default. Very few of them (1.25%) could access formal bank loans since there were a lot of forms to fill, delays and the need for collateral. The entrepreneurs did not belong to cooperative societies as only few (2.5%) could get loans from cooperative societies.

The Table 9 shows that the entrepreneurs stated their business with little sum of money which was not enough for a reasonably business startup fund. The mean startup capital was ₦86, 600.5 ($687.3) which is a reflection of the poverty status of the women entrepreneurs in plantain chip business. The need for more startup capital will make for increased scale of production and employment of more hands in processing of the chips since production is still manual.

The chips enterprise incurred variable costs of ₦778,160 ($4,988) and made total sales of ₦ 1,188,000 ($7,615) with the fixed cost of ₦21,667 ($138,89) being the depreciated value of the slicer, tripod stand, spoons, tray, basin and fryer used by the entrepreneurs. The selling price used here was an average of the selling price of the labeled and unlabeled plantain chips, the labeled chips was three times the price of the unlabeled ones. The profit made by the entrepreneurs was ₦388,173 ($2,488) per annum, this means that the venture is profitable having considered the sales and expenses of the plantain chips. This indicates that processing and marketing of plantain chips is a lucrative business venture if successfully managed. Many families survive with proceeds from this venture especially for the dual income families. The return on investment shows that for every ₦100 ($0.64) spent, ₦48 ($0.30) is being made.
Table 11 shows that 71.25% of the respondent entrepreneurs had workers up to five. Just 8.75% had workers above five while 20% had none. The mean number of workers employed by these entrepreneurs was 4 workers and this implies that employment is generated but the business is still at its juvenile stage and yet to have many entrants for competition.

Employment Creation for distribution
Table 12 shows that majority of the respondents employed an average of 6 sellers to ensure proper distribution since the consumers were small traders, households and civil servants and there was absence of market links and outlets though some labeled chips were supplied to supermarkets/super stores for distribution. The limited distribution/market channel and poor product marketing was a problem and for small and medium enterprises like the plantain chip enterprise to be successful usually there should be a close by market. The distributors were paid based on quantity sold as a form of commission.

From Table 13, the Double log function gave the best fit having an R^2 of 0.88, F value of 73.034, and six significant variables. The linear model has a very high F- value but few significant variables. The variables are statistically significant at 1% and 5% levels of significance. With an R^2 of 0.88, it means that 88% of the variation in profit is caused by a total variation of the independent variables included in the model. The Table shows that age, household size and cost of input were negative and statistically significant at 5% and 1% respectively which implies that increase in age of the entrepreneurs decreases profit as there is a decrease in strenuous activities, increase in maturity and family responsibilities with age. The business experience and startup capital were positive and significant at 1%. This implies a direct relationship with profit. This means that an increase in any of these variables will increases profit. An increase in the cost of input reduced output and invariably profit but a reduction in cost of inputs will increase profit since there is always minimal lose during the preparation stage and this will make many entrepreneurs to remain in business despite some constraints. Experience makes for good managerial skills leading to higher profit so an increase in years of experience increases profit. Household size was negative but significant at 5%. There was an inverse relationship between household size and profit which implies that the profit was used to take care of family responsibilities and at times feed on the product.

Table 14 shows that over 80% of the entrepreneurs complained of lack of storage facilities and high cost of transportation as the major constraints the entrepreneurs faced in the study area. Many of the entrepreneurs (73.75%) had the problem of sourcing for the raw material needs while 42.5 percent of them had difficulty convincing people to accept their product. There is lack of modern technology in the study area to entrepreneurs to better their performance and enjoy economies of scale. The level of competition was relatively low as the entrepreneurs indicated 21.25%.

4. Policy implications and Conclusion

This work looked at the value added to plantain by women entrepreneurs in Imo state. The venture is profitable when operation is on a large scale and with enough credit. The women were motivated more by the training they received from different NGOs and having mentors who have been successful in the business. This business is done by women who are married and need to take care of family needs in the face of economic challenges of the time. The initiative by this category of people needs to be applauded and encouraged through the provision of soft loans and training programs on budgeting to enhance production and marketing activities since industrialization is the catalyst of economic development. Moreover, if the business is well funded it will create more job opportunities for the teaming youths in the study area and hence help reduce social vices that may be the consequences of joblessness.

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Table 1-Distribution of Entrepreneurs according to age

Age [in years]	Frequency	Percentage (%)
25-30	20	25.00
31-40	48	60.00
41-50	12	15.00
Total	80	100.00

Source: Field Survey Data, 2013
Mean= 35 years

Table 2- Distribution of entrepreneurs according to their marital status

Marital status	Frequency	Percentage (%)
Single	26	32.50
Married	54	67.50
Total	80	100

Source: Field Survey Data, 2013

3.3 Household Size

Table 3-Distribution of entrepreneurs according to household size

Household size (No. of persons)	Frequency	Percentage (%)
1-5	27	33.75
6-10	53	66.25
Total	80	100

Mean = 6.3 approx. 6persons Source: Field Survey Data, 2013

Table 4- Educational level (number of years spent in school of the farmers)

Level of education	Frequency	Percentage (%)
[1-6] primary	24	30.00
[7-12] Secondary	55	68.75
[13-18] Tertiary	1	1.25
Total	80	100

Mean = 7.8years Source: Field Survey Data, 2013

Table 5- Distribution of entrepreneurs by occupation

Occupation	Frequency	Percentage (%)
Farming	20	25.00
Trading	58	72.50
Civil Servant	2	2.50
Total	80	100

Source: Field Survey Data, 2013

Table 6-Distribution of entrepreneurs by years of experience

Years of experience	Frequency	Percentage (%)
1-5	52	65.00
6-10	15	18.75
11-15	13	16.25
Total	80	100

Mean=5.6 years Source: Field Survey Data, 2013

Table 7- Distribution of entrepreneurs by motivating factors

Motivational Factors	*Frequency	Percentage
Education	18	15.13
Mentors	20	16.81
Past experience/training	31	26.05
Creativity	16	13.45
Unemployment	13	10.92
Loss of job	10	8.40
Loss of Spouse	11	9.24

***Multiple responses were recorded** **Source: Field Survey Data, 2013**

Table 8- Distribution of entrepreneurs by source of startup capital

Source	*Frequency	Percentage
Personal savings	36	45.00
Loan from "isusu"	61	76.25
Relatives	19	23.75
Loan from banks	1	1.25
Cooperative societies	2	2.50

*Multiple responses were recorded Source: Field Survey Data, 2013

Table 9-Distribution of Entrepreneurs by amount of start-up capital

Amount(₦)	Frequency	Percentage
1001- 100,000	56	70
100,001 – 200,000	19	23.75
200,001 – 300,000	5	6.25
Total	80	100

Mean = ₦ 86,600.50 ($687.3) Source: Field Survey Data, 2013

Table 10- Average Net Returns analysis for Plantain Chip processing and marketing/Annum

Items	**Quantity**	**Price ₦ /unit**	**Value(₦)**
Sales / revenue	9,504pkts	125	1,188, 000
Total revenue (TR)			**1,188,000**
Variable cost (VC)			
Purchase price of Plantain	198 bunches	1540	304,920
Packaging materials	60pkts	150	9,000
Water			18,000
Salt			2,640
Transportation			48,000
Vegetable oil	10kg	2,400	24,000
Firewood	200	250	50,000
Marketing charges	336	100	33,600
Salaries	4	72000	288,000
TotalVariable costs (TVC)			**778,160**
Fixed Costs			
Dep. On machines	1year		**21,667**
Total Costs			**799,827**
Net returns			**388, 173**
Return on invest.			**1.48**

Source: Field Survey Data, 2013 @₦ 156 = $1

Table 11- Distribution of entrepreneurs by number of workers employed for production

Number of workers	Frequency	Percentage
None	16	20
1-5	57	71.25
6-10	7	8.75
Total	80	100

Mean: 3.5 approx. 4 workers Source: Field Survey Data, 2010

Table 12- Distribution of entrepreneurs by number of sellers employed

Number of sellers	Frequency	Percentage
None	6	7.50
1-5	30	37.50
6-10	44	55.00
Total	80	100

Mean = 5.97 approx, 6 persons Source: Field Survey Data, 2013

Table 13- Regression Result on Effect of Socio Economic Variables on Profit of Entrepreneurs

Variable	Linear	Semi Log	Double Log	Exponential
Constant	(-0.582) 10219.6	(22.418) 0.348	(0.392) 1.248	(-3.777) 85732.9
Age(years)	(0.662) 189.659	(-0.074) 0.006	(-2.315)** 0.285	(1.624) 19567.0
Marital status	(0.597) 3890.28	(2.046)** 0.132	(0.116) 0.125	(-0.057) 8617.508
Cost of inputs (₦)	(13.162)* 0.059	(5.940)* 0.000	(-2.828)* 0.133	(1.858)** 9129.84
Years of exp.	(0.644) 1108.37	(-2.896)* 0.038	(2.692)* 0.143	(4.554)* 9821.79
Startup capital	(0.164) 0.106	(0.598) 0.000	(2.880)* 0.148	(0.780) 10188.00
Lev. Of Educa.	(1.536) 549.22	(10.253)* 0.019	(3.840)* 0.087	(-2.104)** 5949.29
Household size	(-2.033)** 794.117	(-2.403)* 0.027	(-1.744)** 0.106	(-0.741) 7300.17
F-Value R^2 No of observa.	141.292 93.2 80	67.732 86.8 80	73.034 88.4 80	21.955 69.6 80

Source: Field Survey Data, 2013 Figures in parenthesis are t-ratios
*1%, **5% Significant levels

Table 14- Distribution of entrepreneurs by constraints encountered

Constraints	*Frequency	Percentage
Lack of modern technology	66	82.50
Gaining acceptance/respect of people	34	42.50
Competition	17	21.25
Lack of storage facilities/epileptic power supply	67	83.75
Scarcity and high cost of input/raw materials	59	73.75
High cost of transportation	71	88.75

*Multiple responses were recorded Source: Field Survey Data, 2013