Comparative Profitability of Women Dominated Fish-Based Livelihood Activities in Southwest, Nigeria

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INTRODUCTION

- Women are more disadvantaged than men in securing formal sector employment opportunities
- Less access to resources and skills tend to confine them low-investment and low-income informal sector livelihood activities

- Increasing economic and social pressures on women to contribute more to household income and assets
- This has challenged them to widen or broaden their on-farm and off-farm agricultural activities in a bid to improve livelihood

- The capacity of smallholder farming and artisanal fishing to provide the major means of survival for the rural populace is fast diminishing in the developing world

INTRODUCTION

- Women are a great force behind the diversification of income-fetching activities
- They do all sorts of things to assure the household of food security during off-farm seasons and periods of shocks
- Two informal sector livelihood activities in which women predominate in Nigeria are artisanal fish capture and marketing of fresh fish
- Nigeria is blessed with over 14 million hectares of reservoirs, lake, ponds and major rivers capable of producing over 980,000 metric tonnes of fish annually (FDF, 2007)

THESIS

- For women, fishing, fish processing and sale provide a very important livelihood support. In coastal communities, women dominate the processing and local trade in fish

- Most of these women lack education, literacy and the financial capital to engage in other livelihood activities

- Some women who depend on fish-based livelihood strategies as primary or only source of income are heads of households (Hall, 2005; Fasina and Mafimisebi, 2010)

- Thus, fish based livelihoods hold great potential for income generation and poverty reduction especially among communities or households living near water resources (Onoja *et al*., 2012)

- Any attempt to improve women's economic status requires information on returns to investment in their traditional livelihood activities

METHODOLOGY

- The study utilized primary data collected from 55 fisher folks and 80 fish marketers selected through multi-stage sampling method

- Data collected were summarized using descriptive and inferential statistics and analysis was done using budgeting and regression models

- Z-statistic was used to test significance of selected variables while regression model helped to identify factors influencing returns to the livelihood strategies

ANALYTICAL TECHNIQUES

NP= TR-TC---------- 1

Where NP= Net Profit

TR = Total Revenue

TC = Total Cost

$$z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S_1^2/n_1} + \sqrt{S_2^2/n_2}}$$

Where z = standard "Z" distribution value (Z calculated)

$\bar{X}_1$ = mean net profit for fisher folks

$\bar{X}_2$ = mean net profit for fish marketers

S_1 = standard deviation of net profit sample mean for fisher folks

S_2 = standard deviation of net profit sample mean for fish marketers

n_1 = sample size for fisher folks (55)

n_2 = sample size for marketers (80)

For fisher folks,

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, u)$ ……(3)

Where

Y = Profit from fishing (N)

X_1 = Quantity of fish caught for sale (kg)

X_2 = Cost of input (N)

X_3 = Age (years)

X_4 = Fishing ground (freshwater =1 saltwater = 0)

X_5 = Distance covered (nautical miles)

X_6 = Household size

X_7 = Years of experience in hunting

X_8 = Season (raining season =1 dry season = 2)

u = Random component which takes care of omitted variables that could affect profit

For fish marketers, the explicit regression equation is of the form

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, u)$ ……(4)

Where

Y = Profit from fish marketing (N)

X_1 = Quantity of fish sold (kg)

X_2 = Cost of transportation (N)

X_3 = Cost of fish purchased for resale (N)

X_4 = Cost of other marketing functions (N)

X_5 = Household size

X_6 = Years of marketing experience

X_7 = Age (yrs)

X_8 =Number of years of formal education

u = Random component which takes care of omitted variables that could affect profit

RESULTS AND DISCUSSION

- Empirical findings revealed that about 75.0% of fisher folks either had no formal education or had only primary education
- Majority (50.0%) of marketers had secondary school education
- About 74.0% of fisher folks and 66.0% of marketers considered their venture as major livelihood source
- Most (77.6%) of respondents took to these ventures to provide for their households or supplement spouse's income

Table 1: Distribution of respondents by Selected Socio-economic Characteristics

Variables	Fisher Folks		Fish Marketers	
Level of Formal Education Attained	Number	%	Number	%
No Formal Education	17	30.5	20	24.8
Primary School Education	24`	44.5	20	25.5
Secondary School Education	14	25.0	39	49.7
Tertiary Education	0	0.0	0	0.0
Total	55	100	80	100
Class of Occupation				
Major	41	74.5	70	56.0
Minor	14	25.5	10	44.0
Total	55	100	80	100

Source: Survey data, 2012.

Table 1: Distribution of respondents by Selected Socio-economic Characteristics

Variables	Fisher Folks		Fish Marketers	
Marital Status	Number	%	Number	%
Married	41	74.6	80	100
Widow	5	9.1	0	0
Divorced	4	7.3	0	0
Total	55	100	80	100
Household Size				
≤ 6	28	50.9	46	57.5
7 – 13	22	40.0	25	31.3
≥14	5	9.1	09	11.2
Total	55	100	80	100

Source: Survey data, 2012.

Table 1: Distribution of respondents by Selected Socio-economic Characteristics

Variables	Fisher Folks		Fish Marketers	
Marital Status	Number	%	Number	%
Age Distribution(yrs)				
≤ 35	21	38.0	19	23.7
36 – 40	17	30.8	23	28.7
41 – 45	14	26.2	17	21.3
≥ 50	3	5.0	21	26.3
Total	55	100	80	100
Mean	38		41	
Years of Experience				
1 – 5	7	12.7	15	18.6
6 – 10	41	74.3	56	70.0
11-15	7	13.0	9	11.3
Total	55	100	80	100

Source: Survey data, 2012.

Cost Components and Profitability of Operations

- The budgeting model revealed that fisher folks incurred annual total variable cost of ₦ 1,158,174.00, total fixed cost of ₦ 4,757,151.25 while total revenue was ₦ 8,297,952.00

- The corresponding value for marketers was ₦ 1,202,606.00, ₦ 385,167.00 and ₦ 2,228,000.00

- The net revenue accrued to fish hunters per annum was ₦2,882,626.00 while that of marketers was ₦ 640,227.00

- At 53.2% for fish capture and 40.3% for fish marketing, returns to investment was better in fish capture than in fish marketing

- There were significant differences between profit realized from the two livelihood sources at conventional significance levels

TABLE 2: Cost Structure of Fisher folks

	Cost (₦)	Percentage (%)
A) Revenue generated from fish hunting per year = ₦8, 297,952.00		
B) Variable Costs		
Traps and baits	846,174.00	12.24
Other materials	312,000	4.51
Total Variable Cost (TVC)	1,158,174.00	

Source: Survey data, 2012.

TABLE 2: Cost Structure of Fisher folks (Contd)

	Cost (₦)	Percentage (%)
C) Depreciated fixed cost Items		
Boats/Canoes	5,757,151.25	83.25
Total Fixed Cost (TFC)	5,757,151.25	
Total Cost (TC)	6,915,325.25	

Source: Survey data, 2012

Table 3: Cost Structure of Fish Marketers

	Cost (₦)	Percentage (%)
A) Revenue generated from fish hunting per year = ₦2, 228,000		
B) Variable Cost		
Cost of Transportation	126,024.00	7.93
Labour	23,744.00	1.50
Cost of Fish sold	1,052,838.00	66.31
Total Variable Cost (TVC)	1,202, 606.00	

Source: Survey data, 2012.

Table 3: Cost Structure of Fish Marketers (Contd)

	Cost (₦)	Percentage (%)
C) Depreciated fixed cost items		
Rent of Premises(including market stall)	180,000.00	11.34
Basket	15,523.40	0.98
Boats/Canoes	140,300.00	8.86
Other Marketing functions	49,343.60	3.10
Total Fixed Cost (TFC)	385,167.00	
Total Cost (TC)	1,587,773.00	

Source: Survey data, 2012.

NET REVENUE

- **For Fisher Folks:**

  Net Revenue (NR) = Total Revenue (TR) – Total Cost (TC)

  NR = ₦8, 297,952.00 - ₦ 6,915,325.25

  NR = ₦2,882,626.75

- **For Fish Marketers:**

  Net Revenue = Total Revenue (TR) – Total cost (TC)

  NR = ₦2,228,000.00 - ₦1,587,773

  NR = ₦640,227.00

- These returns are comparable to returns from other informal sector ventures in Nigeria (Mafimisebi *et al*., 2002; Mafimisebi and Okunmadewa, 2004; Mafimisebi, 2007; Mafimisebi *et al*., 2013)

Test of Significance

Using the Z-statistic to test for significant difference between the returns from the two ventures gave result showing that there was a significant difference between the income generated by fisher folks and fish marketers at the 1% significance level

Group	Number (N)	Mean Income(₦)	Z-Calculated
Fisher Folks	55	57,652.54	
			33.7***
Fish Marketers	80	8,002.84	

Source: Survey data, 2012

Factors Influencing Income from Fish Hunting and Fish Marketing

- The factors influencing profit generated from fish hunting and marketing were determined through multiple regression model

- In both cases, the double-log functional form gave the best-fit equation

- For fish hunting, the coefficient of determination, R^2 values of 0.76 indicated that 76.0% of the variations in income were explained by the explanatory variables.

Factors Influencing Income from Fish Hunting and Fish Marketing

- OLS regression result showed that the significant factors which influenced returns from fish capture included quantity of fish caught, experience, season and distance covered in fishing

- Quantity of fish sold, transportation cost, purchase cost, experience and household size were the significant factors influencing returns from fish marketing

Table 5: The regression results of the determinants of returns from fish hunting

Variable	Coefficient	Beta	T	Significance
Constant	9.282	-	6.235	0.000***
Qty of fish caught	0.601	1.421	3.421	0.001
Cost of input	-0.831	-0 .174	-1.264	-0.674
Age	0.261	2.163	1.382	0.592
Fish ground	0.127	0 .116	0.751	0.041**
Distance Covered	0.506	0.374	3.780	0.057**
Household size	0.341	0.206	2.783	1.795
Years of Experience	0.591	0.276	2.731	0.041***
Season	0.228	0.103	5.232	0.002***

Source: Survey data, 2012

Table 6: Results of Regression Determinants of Returns from Fish Marketing

Variable	Coefficient	Beta	T	Significance
Constant	6.732	-	3.882	0.000*
Qty of fish sold	0.201	0.204	2.534	0.032*
Cost of Transportation	-0.263	-0 .174	-1.134	-0.049**
Cost of fish purchased for resale	-0.276	-0.263	-2.331	-0.005***
Cost of other marketing functions	-0.027	-0 .056	-0.425	-0.534
Household size	0.006	0.248	2.080	0.035**
Years of marketing experience	0.141	0.163	1.783	0.009***
Age	0.392	0.316	3.33	0.142
Level of Education	7.328	0.421	4.182	1.529

Source: Survey data, 2012

Coefficients of Determination and Significant Level

- For Fish Hunting: $R^2 = 0.76$
- Number of significant variables = 4

- For Fish Marketing: $R^2 = 0.72$
- Number of significant variables = 5

- ***1% significant
- **5%significant

Contribution of Fisher Folks' and Fish Sellers' Income to Household Expenditure

- The primary objective of the respondents' engagement in fish hunting and marketing is to earn income to sustain their livelihood

- Thus, respondents used part of their profit to supplement household expenditure and ploughed the remaining back into their business

- Table 7 showed the average contributions made by respondents to supplement household expenditure

- The fisher folks spent 77.8% of the returns on their fish hunting investment to supplement household expenditure and ploughed back 22.2% into the venture

Table 7: Share of Respondents' Earnings Devoted to Household Expenditure

Category of Respondents	Contribution to Household Expenditure (₦)	Share of the Profit (%)	Plough back to Business (₦)	Share of the profit (%)
Fisher folks	2,242,683.61	77.8	639,943.14	22.2
Fish marketers	443,037.08	69.2	197,189.92	30.8

Source: Survey data, 2012

CHALLENGES FACED IN LIVELIHOOD ACTIVITIES

- The major challenges faced by fish hunters included increasing cost of canoes, short supply of gears, attack on fishing gears and fisher folks by dangerous animals and poaching of fish traps

- For marketers, challenges included high transportation cost and losses from perished unsold fish

- Both groups face lack of access to formal credit

- Organizing women informal sector operators into groups to enable them access government support and bank credit are recommended for improving women's livelihood

- It is concluded that fish capture and fish marketing are profitable ventures and that earnings realized contribute to households' welfare

RECOMMENDATIONS AND CONCLUSION

- The study concluded that fish capture and fish marketing were profitable ventures and that income realized made contributions to uplifting households' living standards

- Policy makers are enjoined to make policy to assist group formation by women in informal sector ventures to empower them and enable them access bank credit and capital assets

- Capacity building programmes directed at better business management are also necessary

- Policy on sustainable fishing and better preservation facilities to enhance returns are important issues in improving business performance in these women-dominated ventures

Thank You for Your Attention