

To Encourage Rural Employment and Income Through Dry Fish (Shutki) Processing Farming Household in Kishoregonj District

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Abstract

The haor basin is important fish production area of Bangladesh and it has some commercial and ecological importance. The study was carried out in haor areas situated in Nikli upazila under Kishoregonj Districts to explore the socio-economic vulnerabilities status of the people residing near deep haor areas and their dependency on its natural resources. Smallholder agriculture is characterized unemployment during the off-season, low income earnings and serves post harvest losses. The study thus, analyzed the economics and income generating of dry fishing by rural farm households to estimate the socio-economic and policy strategies required to stimulate rural enterprise. Multistage sampling technique was used to collect data from 150 respondents using structured questionnaire. Descriptive statistics budgetary analysis and Cobb Douglass regression function were used to analyses to collect data. Results revealed that women constituted 90% of processor and had a mean age of 36 years, family size average 9 while the level of education among the processors was low. The initial capital invested in the enterprise average BDT 20,106 and came mostly from personal savings. The gross margin and net income were BDT 329,178.00 and 86,119.00 respectively. The internal rate of return (IRR) of dry fish processing enterprise was 1.84 while the benefit-cost ratio was 1.17. The regression analysis should enterprise was significant determinates of the profitability of dry fish processing enterprise while age, experience, level of education and initial capital outlay were significant determination of the size of enterprise. A policy effort should be geared towards accessing processors with locally fabricated machines while policy, research and extension regarding food processing at the rural farm-gate should be tailoring to meet and needs and constraints of women.

Key words: Socio-economic, Cost & return, Processing, Off-season, Unemployment

Introduction

The vast majority of Bangladesh's population depends for its survival on wetlands which cover more than half of the country's geographical area. They are home to some 25000 inhabitants most of whom are engaged in agriculture and subsistence fishing in the haor. The population density of the haor basin is relatively low compared to the rest of the country, average 1000 population per village, household size stands at 6.5, birth rate 3.2 and 35% of the population is below the age of 10 years. Haor is basically very low lying river basin area below the level of flood plain, which is also similar to swamp land covered by water almost 6(six) months of a year starting from the monsoon. These are important fishing ground and important area of boro rice cultivation of the country. The small-scale agricultural based enterprises are important sources of potential employment (Hobbs, 2000).The study area was covered in Nikli upazila under Kishoregonj district where floods and river erosion, recurrent and there was a presence of abject poverty. Fifty five percent populations were absolutely landless and the most marginalized living depends on the physical labor in agriculture field and fisheries. The water bodies are leased by government to rich people resulting poor people have no access to natural resources. The major economic sector of income and livelihood was agriculture and there was mainly mono cropping system. But the peculiar early flash floods often wash away the standing crops and people lose their harvest. Therefore, people were unable to come out of vicious poverty cycle. Due to extremely poor communication there was no quick transportation, spread of health facilities and educational institutions for population living at remote areas. The main objectives of the study is to evaluate the economic potentials of dry fish processing enterprise in the rural areas of Kishoregonj districts to determent the socio-economic and policy support necessary to increase the viability of the process.

Materials and Methods

The study area is Kishoregonj haor covering Nikli and Sadar upazila that are large saucer-shaped flood plain depressions located mostly in north-eastern region of the country covering about 25% of the entire region. The extreme flashy character of the rivers and high rainfall compare to other part of the country in the region causes frequent flash floods in the haor. In haor area three major resources viz. land, water & human resources could not be utilized in an integrated way due to its unique geographical as well as complex hydrological characteristics. Some of the communication networks, multiple use of water resources with emphasis on fishery, agriculture, cattle/poultry farming and employment opportunities for both men and women throughout the year. Nikli upazila (Kishoregonj district) with an area of 214.40 sq km, is bounded by Karimganj and Mithamain upazilas on the north, Bajitpur upazila on the south, Mithamain and Austagram upazilas on the east, Katiadi and Karimganj upazilas on the west. Main rivers are Dhanu, Ghorautra, Boda, Narasunda; depression 16; Bara Beel, Tegulia Beel, Nayanbali Beel and Raoar Beel are notable. Nikli (Town) consists of two mouzas. The town has an area of 7.62 sq km and population of 15090. Literacy rate among the town people is 20.03%. The Main occupation is agriculture farming 42.74%, fishing 4.08%, agricultural labour 29.48%, wage labour 2.97%, commerce 8.34%, service 2.29%, others 10.1%. The town has one dakbungalow. The upazila consists of 6 union parishads, 43 mouzas and 122 villages.

Multi-stage random sampling technique was used to select respondents for the study. First, the upazila was purposively selected because the major non-farm occupation by agricultural households in the rural areas is food processing.

Second, six upazilas were also purposively selected because they constitute the nucleus of dry fish processing enterprise in the study areas. In each of the six upazilas, five dry fish processing households were also randomly selected for the study. In all, 150 respondents were sampled. Data were collected from the respondents using pre-testing questionnaire.

Variables tested include the socio-economic characteristics of dry fish processor like age, number of years spent in school, family size and marital status. Others include amount invested in the enterprise, source of such funds, current value of enterprise, revenue and cost of operation.

Data analysis: Data were analyzed using descriptive statistics budgetary and regression analyses. Descriptive statistics including frequency counts, percentage and mean, were used to analyze the socio economic characteristics of the respondent while budgetary analysis was carried out to determine the profitability of dry fish processing enterprise.

The gross margin was estimated as the difference between total revenue and total variable cost of dry fish processing operations as stated in Equation 1.

$$\Pi_1 = P_1 Q_1 - TC_1 \text{-----} (1)$$

Where,

- Π_1 = Gross margin per enterprise
- P_1 = Price per unit of output
- Q_1 = Output of individual enterprise (in Kg)
- TC_1 = Total costs of production
= (Fixed cost + Variable cost)
= (FC+VC)
- TC_1 = FC + VC

Ratio measures were computed to assess the performance of the enterprise during the survey period.

Two regression models were estimated to establish relationships between factors affecting profitability and enterprise size, the model on enterprise profitability as given by the net income was specified as;

$$Y_1 = F(X_1, X_2, X_3, X_4, X_5, X_6 \text{-----}U) \text{-----} (2)$$

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Where,

- Y₁ = Net income
- X₁ = Age of respondent
- X₂ = Experience of business
- X₃ = Size of enterprise
- X₄ = Production cost
- X₅ = Level of education
- X₆ = Number of labor employment of this enterprise
- U = Error terms
- F = Function relationship

A prior, all the variables were expected to be positive correlated with net income except X₄ which was expected to be negatively correlated.

The model on enterprise size was also specified as;

$$Y_2 = F(X_1, X_2, X_6, X_7, X_8, U) \text{-----} (3)$$

- X₂ = Size of enterprise
- X₇ = Initial Capital outlay
- X₈ = Family Size
- (X₁, X₂, X₆ U and F are as previous defined)

A, Prior expectation for the variable where for X₁, X₂, X₆ and X₇ to be positively correlated to size of enterprise while X₈ was expected to be either positively or negatively correlated depending on whether the family is a production or consumption unit respectively. It was also assumed that age of the farmers, experiences in enterprise, number of years spent in formal education and initial capital outlay are crucial to achieving enhanced net income and larger enterprise sizes while hired labour and high cost of production will help limit these variables (Ayanwale ABO Oluwasola, 2008)

Results and Discussion

The gross margin to enterprise is 329,178 while net profit was 68,119.00 (Table 1). The rate of return to enterprise was 1.84 and indicates an increasing return to scale with every 100 invested returning 184. The Benefit Cost Ratio of 1.17 indicates that dry fish processing is profitable in the study area as every 100 invested in the enterprise yields additional 17 over and above the amount invested.

Table 1. Analysis of cost and return of dry fish processing enterprise in haor area

SL No	Items	Amount (BDT)
01	Total revenue	471,900.00
02	Total Variable cost	329,178.00
03	Gross Margin	329,178.00
04	Total Fixed cost	74,603.00
05	Net profit	68,117.00
06	Benefit Cost Ratio (TR/TC)	1.17
07	Rate of return	1.84

Factors affecting the profitability of dry fish processing enterprise in haor areas

$$\ln Y_1 = 17.333 - 3.061 \ln X_1 (1.468) + 1.422 \ln X_2 (0.485) - 2.151 \ln X_3 (1.030) - 1.55 \ln X_4 (1.485) + 0.491 \ln X_5 (0.263) + 0.295 \ln X_6 (0.576) \text{-----} (4)$$

R² = 0.792; adjR² = 0.695; F-ratio=4.439
 (Figure in parenthesis none the standard errors)
 NB: *Significant at 0.05 levels.

Equation 4 shows the factors affecting profitability of dry fish processing enterprise. The model shows that in conformity with a prior expectations, experience of respondents in processing enterprise (X₂), the number of labor employed (X₅) and the level of education of respondents (X₆) were positively correlated with the net income. However, contrary to a priori exceptions, the age of the respondents (X₁) and size of the enterprise

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(X₃) were negatively correlated with the net income. The cost of production (X₄) was also negatively correlated with net income in conformity with a priori expectations; three of the variables age of the respondents of dry fish processing enterprise (X₂) and size of enterprise (X₃) were statistically significant.

Equation 4 indicates that the age of respondents is negatively correlated with net income from dry fish processing enterprise. A unit increased in age will reduce net income by 306%. The operation of dry fish processing plant is labor intensive and laborious hence, as processors age, their strength wanes and net income falls. The variable is statistically significant. This suggests that improved labor saving processing machines are required to keep women in processing business and profitability too especially. The level of experience of dry fish processor in the business is critical for an enhanced net income and is statistically significant. As shown, a unit increase in the level of experience in dry fish processing will increase net income by 142%. The model also shows that a unit increase in the size of enterprise will reduce income by 215% as the variables negatively correlated and statistically significant. The cost of production is also negatively correlated with net income. A unit increased in the cost of production will reduce net income by 166% although the variables were not statistically significant. This implies that processors will have to make use of self and family labour to keep the cost of production down. This has the implication of keeping the size of enterprise small, labour utilization in dry fish processing enterprise was positively correlated to the net income (Taylor DF, 2001). As shows a unit increases in the number of labour in the processing enterprise will increase net income by 49% although the variable was not statistically significant. Finally, although not significant, a unit increases in the level of education of respondent will increase net income by 29.5%.

The adjusted coefficient of determination of 0.695 indicates that about 70% of the variability in the factors determining profitability of dry fish processing enterprise, as given by net income realized is associated with the explanatory variables specified in the model.

Factors affecting the size of dry fish processing enterprise in haor areas

$$\ln Y_2 = 9.626 - 0.523 \ln X_1 (0.129) + 0.33 \ln X_2 (0.133) + 0.287 \ln X_6 (0.093) + 0.153 \ln X_7 (0.106) + 1.597 \ln X_8 (0.432) \text{---(5)}$$

$$R^2 = 0.597, \text{adj}R^2 = 0.555; F\text{-ratio} = 13.996$$

(Figure in parenthesis none the standard errors)

NB: *Significant at 0.05 levels.

The model shows that all the variables, in conformity with a priori, expectations, where positively correlated with size of enterprise except the age of respondent (X₁) which was negatively correlated. In addition, all the variables with the exception of family size (X₈) were statistically significant. As shows, the age of respondent is negatively correlated with size of enterprise and a unit increase in age will reduce enterprise size by 52%. The variable is statistically significant. As mentioned, small-scale dry fish processing enterprises are labourious and labour intensive hence, aging processors do not have the necessary strength to contribute to earn income to plough back in the business. In fact, since most of their children, who provide family labour would have left for school, learn trades or establish their own businesses, output and consequently enterprise size falls. A unit increases in the experience of dry fish processor increased enterprise size by 35% while a unit increases enterprise size by 29%. The two variables were statistically significant. The initial capital outlay is critical and significant to the size of the enterprise. A unit increase in the variables will lead to 15% in the enterprise size.

Finally, a unit increase in family size will lead to about 160% increase in the enterprise size. This implies that contribution of the family is very critical, however, the variables was not statistically significant. The adjusted coefficient of determination of 0.555 indicates that about 56% of the variability in the factors determining size of dry fish processing enterprise is associated with the explanatory variable specified in the model. This further shows that, there are other important factors determining enterprise size that was not captured in the model.

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Recommendations

The study of dry fish processing enterprises is profitable on small scales of rural area. Not only is credit crucial for modernizing the business but also the mobilization saving to enhance entrepreneurial capacity. The study provides the necessary catalyst to income and employment for rural households, especially during off-season in haor areas and enhances the food security goal of the Bangladesh.

- I. Successful pro-poor models for community-based smallholder dry fish processing including appropriate contact farming schemes would be replicated.
- II. Small level dry fish processor integrated with fish culture would be promoted
- III. To broaden the scope of the marketing function so that marketing intelligence is able to determine products that offer competitive and/or comparative advantage in domestic and foreign markets and their suitability for production/processing in Bangladesh; offering an efficient marketing information dissemination to our clients.
- IV. To encouraging active participation of agriculture entrepreneurs, facilitating agribusiness entrepreneurs for development and exploiting their potentials in the agribusiness sector, assisting agribusiness entrepreneur's competency through capacity building, creation of partnership and better communication, delivering advisory/consultancy services in relation to information and opportunities in agribusiness, financial assistance, and business networking in the agribusiness sector. The modern farmer becomes an expert involved with the fishing and breeding operations, thus transferring the functions of storing, processing and distribution of farm products as well as supply to input and production factors to other organization (Wilk *et al.*, 2003).
- V. To collect and analyze the marketing information, doing marketing analysis on agriculture projects, disseminating local and international projects information in relations to agriculture, promoting agriculture investment, undergoing surveys and research on agriculture commodity, compiling, preparing and distributing annual agriculture statistics.

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