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Financial Analysis and Risk Assessment of Grouper Cage Culture Systems in Negros Occidental

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Abstract - The study assessed the financial and risk exposures of grouper cage farming in Negros Occidental. Through survey questionnaire administered to 68 grouper cage growers in the four grouper growing areas in Binalbagan, Himamaylan, Hinigaran, and Sagay, the study appraised the feasibility and viability of grouper cage farming and established a benchmark for cage farmers in making crucial investment decisions in mariculture development. Data on the financial analysis and risk indicators were analyzed using the mean, range, and standard deviation. Data were presented by province and by LGUs. Results of the study showed that a return of investment (ROI) of 29.95% is realized which is far behind the ROI of some aquaculture projects like shrimp hatchery (40%) and grouper culture in ponds (82%). Likewise, the analysis showed a payback period of 3.88 years which seems not economically feasible as it posed a high risk of payment default when capital is sourced from banks. It is also noted that the length

of the cropping cycle is prolonged from normally 8 months to 10.6 months average and had a long recovery period (3 years and 6 months) for the capital invested. Though the project is not financially attractive in some variables, the project is still feasible in most important variables like profit per crop (Php26,541.76) and profit margin (29.91%). Among the four LGUs, Binalbagan showed the best performance in both financial analysis and risk indicators indicating the area is attractive for mariculture project.

Keywords - financial analysis, risk assessments, grouper cage culture, risk exposure indicators

INTRODUCTION

Grouper farming has been very attractive for small scale fish farmers in the Philippines. This is because grouper can yield a high profit margin against traditional species such as milkfish and prawn (Baliao et al, 1998; Baliao et al. 2002; Pomeroy and Agbayani, 2002; Santos, Pador, De la Torre, 2003) and generated substantial revenue, net present value and benefit cost ratio (Rimmer et al. 1994). Valued for its excellent texture and flavor, this species became very popular in urban restaurants and supermarket chains. In addition, price per kilogram is one of the most expensive for fish commodities. However, the farmers' lament of rearing this species is blamed on the seasonal unstable market. There are few buyers middlemen involved in the industry, therefore pricing has not been very competitive. In fact, businessmen complained about the lack of technical support from the fishery related agencies of the government (Santos, Pador, De la Torre, 2003).

Financial and risk analysis can not be expected to solve all problems, but it can improve decision making in the face of these uncertainties. The decision maker should be well informed of the business environment in order for him to make good judgments in his operations. Financial and risk analysis should precede the decision,

rather than being commissioned to support decision. Though decision making is based on assumptions, the existence of uncertainty and subjectivity does not mean that valid conclusions cannot be drawn (Rodgers, 2002). The grouper cage growers and prospective investors must have solid information based on experience and the industry reports which would serve as bases for his projections and decisions.

This study is conducted to assess the economic feasibility and risk exposures of grouper cage culture as guide for investment and management decision making to support development initiatives for mariculture as a potential industry.

METHODOLOGY

The study used the descriptive method of research to evaluate the financial performance and risk exposures of grouper cage culture in Negros Occidental.

The survey instrument (Appendix 1) is developed to gather data to facilitate the evaluation of investment profitability and risk exposures of cage culture whereby production, revenue, investment, labor, expenditures and capital resources are the main focus of the study.

The questionnaire was administered personally to the respondents in the four grouper growing LGUs- Binalbagan, Himamaylan, Hinigaran, and Sagay. The prospect respondents were the owners or caretakers who provided honest and comprehensive answers to the questionnaire.

For uniform interpretation of the financial and production variables collected, research assistants, who were trained enumerators and knowledgeable on farm management practices, helped in the data gathering. They also assisted the respondents compute financial data based from the definition or formula of each financial and risk indicator categories.

The financial and risks variables were subjected to statistical analysis using range, mean, and standard deviation. The research variables under financial analysis are as follows: profit per crop, return of investment, payback period, unit production cost, and breakeven analysis. Under risk exposures are the following: total investment, the length of cropping cycle, the lead time before the return occurs, the cost of operation required per cycle, and profit margin.

Interpretation and analysis of the level of financial feasibility and risk exposure are as follows:

Financial analysis

- profit per crop - the higher the value means the project is feasible.
- return on investment - the higher the value (expressed in percentage), the project relates profitability.
- payback period - the lower the value, the project shows liquidity.
- unit production cost - the lower the cost of products to produce means feasibility.
- breakeven analysis - it indicates the lowest amount of business activity necessary to prevent losses.

Risk analysis

- total investment - the bigger the outgoing cost before any return is generated the higher the project exposed to risk.
- the length of cropping cycle - shorter rearing period means lesser risk to externalities like typhoons, floods, diseases occurrence, etc.
- the lead time before the returns occur - the shorter the time in the production cycle the lesser the project exposed to risk.
- the cost of operation required for each cycle - the lower the operational cost of each cycle, the project is economically best.
- profit margin - it is the amount earned for every peso of sales. The higher the value of profit margin means higher profitability.

RESULTS AND DISCUSSIONS

Majority of the 68 farmers' ages are in the range of 46-55 years. On their education, 35.3% of the respondents graduated from their elementary, 30.9% are high school level, and 33.8% are college level. Majority of the farmers have been in grouper production from 3-9 years.

Financial Analysis

Profit per crop. Table 3 showed the mean profit is Php 26, 541.76. The gap between the lowest and the highest profit is extremes (Php 2,000 and Php 120,000). The distance between the two values can be explained on the variation of the size of the cage, investment on infrastructure, and intensity of culture operation.

Return on Investment. ROI showed a minimum of 10% and a maximum of 60% with a mean of 29.95%. This is way behind the ROI of some aquaculture projects in the previous studies e.g. shrimp hatchery (40%), grouper reared in cages (59%), and grouper reared in ponds (82%). It was noted that low ROI is the result of substantial drop in market price of groupers and the increase of the cost of trash fish used as the food of groupers.

Payback Period. The average payback period is 3.88 years. This is above the 1.68 estimated payback period of grouper reared in cages reported by Baliao et al. in 2000. There are fish cages in the present study that exhibited payback period of 1.5 years while others showed as much as 10 years. The longer payback period suggests that lending money for cage project posed a high risk of payment default.

Breakeven Prices. Breakeven price ranged from Php 90.00 to Php 266.00 with average of Php 195.00.Like other fish commodities, price is elastic considering the gap in minimum values and it declines rapidly as the total production increases.

Breakeven Production. Farmers should produce an average of 285.70 kilograms to cover operating costs. The data showed a wide variation of production between 40 and 1840 kilograms.

Breakeven Feed Conversion Ratio (FCR). The average FCR is 12.98 which is above the standard FCR for trash fish of 5-10 FCR. High FCR could be the effects of inferior quality feeds, poor rearing environment that reduces feeding, and poor feeding management.

Table 3. Financial analysis indicators of grouper cage culture (N= 68)

Financial Indicators	Range	Mean	Standard Deviation
Profit per Crop (Php)	2,000.00- 20,000.00	26,541.76	24,593.32
ROI (%)	10.00- 60.00	29.95	11.68
Payback Period (Yr)	1.5- 10.00	3.88	1.85
Break-Even Price (Php)	90.00- 266.00	195.00	30.70
Break-Even Production (kgs.)	40.00- 1,840.00	285.70	298.05
Breakeven FCR	7.00- 25.00	12.98	2.95

Risk Exposure Indicators

Total Investment. The smallest investment is Php 15,040.00 while the biggest investment is Php 423,000.00 (Table 4). Grouper farming is capital intensive. Seeds and feeds constitute a bigger share in the total capital requirement. Grouper being a high value crop, a good production performance supported with a good market price could easily recover the investment.

Length of Cropping Cycle. Average rearing period of grouper from fry stage (1-9 cm total length) up to marketable size (550-700 g) takes normally eight (8) months. The data showed that the rearing period takes from 7-12 months with an average of 10.6 months. A prolong rearing period means additional expenses for feed, labor and expose the project to risk factors like floods, typhoons, pollution, low dissolved oxygen and diseases.

The Lead Time Before the Return Occur. There is an average of 42 months lead time which is translated into three (3) years and six (6) months the time required in the production cycle before profit is realized. The duration is long enough to undermine the capacity of the fish cage growers to recover the initial investment of the project.

Operational Cost. The average expense for one (1) cropping cycle is Php 72,416.22 with the range of Php 10,000.00 and Php 280,000.00. With the standard deviation of Php 65,423.91, the operational cost is highly variable.

Profit Margin. Profit margin is generally acceptable with an average of 29.91%, meaning the project is gaining approximately 30 centavos for every peso of investment. If labor cost is excluded in the operational cost and the price of output is maintained on its true value, the profit margin increased significantly.

Table 4. Risk exposure indicators of grouper cage culture (N=68)

Risk Exposure Indicators	Range	Mean	Standard Deviation
Total Investment (Php)	15,040 - 423,000	107,761.83	101,855.59
Length of Cropping Cycle (months)	7- 12	10.6	1.4
Lead Time Before the Return Occur (mon)	18.00- 110.00	42.00	19.90
Operational Cost (Php)	10,000- 280,000	72,416.22	65,413.91
Profit Margin (%)	10.00- 85.00	29.91	12.16

Municipality of Binalbagan (n=2) showed the best financial performance in four financial categories: Profit/Crop (Php 67,500), Return on Investment (42.50%), Payback Period (2.85 years) and Breakeven FCR (10). While some LGUs performed in other categories, but they also had their weak points. Hinigaran for example, had performed well in Profit/Crop second after Binalbagan but its Breakeven FCR is said to be the most expensive (FCR 14.58). Sagay performed well in Breakeven Price, Breakeven Production, and Breakeven FCR than the rests of the LGU respondents but the financial indicators failed to show the true picture of its financial feasibility because of the very limited respondent. In the whole of Sagay, there is only one farmer engaged in grouper cage culture. Himamaylan had the most number of respondents (N=53) but showed the lowest profit/crop (Php 12,093).

In terms of the comparison of risk exposures of grouper cage culture by LGU, results revealed that Himamaylan have the lowest average investment for cage (Php 64,823.68) compared to three other LGUs: Hinigaran (Php 239,003), Binalbagan (Php 341,500) and Sagay (Php 150,000). The differences in cost can be explained by the size of the cage. Larger cage cost more. This particularly referred to cages in Binalbagan and Hinigaran where most of the respondents have larger

cage structures. Of the four LGUs, Binalbagan performed well in categories such as the length of cropping cycle (9 months), the lead time before the return occur (30 months), and profit margin (32.50 %), except for the operating cost which showed to be the highest (Php 170,101.50). Differences in profit margin of the four LGUs are somewhat minimal. This could be attributed marketing strategy of direct selling of fish to the brokers and wholesale buyers. Cage farmers were able to get the higher price for their fish because no middleman is involved. On the other hand, high operating cost can be best explained by the magnitude of cage operation. Cages in Binalbagan and Hinigaran are bigger in size and most of the cages are operated in commercial scale than cages in Himamaylan and Sagay.

CONCLUSIONS

The project is still generally feasible as projected in its financial analysis and risk indicators except for some implications: the longer payback period of 3.88 years, prolonged rearing period which normally takes from eight (8) months to 10 months on the average.

RECOMMENDATION

In the light of the conclusions, the study recommends the following:

Through government and public sector collaboration, soft loans should be made available to cage growers to increase capitalization.

Cage farmers should organize into associations or cooperatives to give them collective legal personality that the banks prefer.

The government should do something to increase competitions by encouraging more buyers or brokers to join the live-fish trade. The more buyers are involved in the live fish trade, the more choices for farmers to whom to sell their product.

The government should offer incentives in the forms of negotiated reduced freight rates and tax discounts.

Cage culture practices and scale of operation are part of the production parameters and therefore should be considered in a follow up study so that “typical returns” can be rightly established.

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