

Financial report of an aquaculture production unit

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Abstract

Aquaculturists located in the Mixteca Poblana region, have found in this activity an opportunity for economic development, representing an additional source of income in the absence of jobs in the same area. However due to the lack of professionalism of these Units Aquaculture Production (UPA's) is difficult for the producer to determine whether the company is profitable. The objective of this research is to know the financial situation of a farm dedicated to the production of channel catfish (*Ictalurus punctatus*), through a preliminary diagnosis to identify areas of financial opportunity in it. With the identification of costs, income determination, integration of earnings report and application of financial reasons, it was concluded that the financial condition of the company is unfavorable because it has losses in the crop cycle catfish analyzed in the present study. This research highlights the need to professionalize this type of micro-enterprises to achieve their healthy development and continued market.

Financial diagnosis, aquaculture sector, financial administration

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Introduction

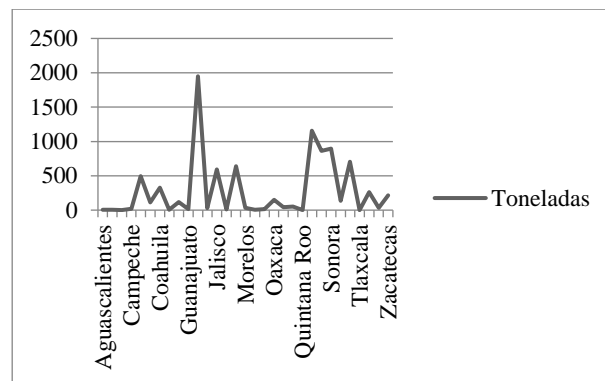
The economic context of the MiPymes in Mexico requires measures and strategies that allow them to survive in the market, surpassing the threshold of life that in our country is around 5 years on average (Business Advisory Council, 2013).

In particular, micro and small companies in the agroindustrial sector share characteristics that allow them to be generators of development in the communities where they are located, mainly to take advantage of the natural resources that they obtain from the same place. In this research work, an approach to a micro-enterprise of the primary sector known as "El Oasis", is an aquaculture farm dedicated to the production of catfish, located in a rural town south of the state of Puebla, with only 2 years operating entrepreneur hopes to develop its production unit.

The objective of the present investigation is to inform the entrepreneur about the financial result obtained in a productive cycle (8 months), in order to identify if there is a profit or loss in the same.

Catfish (*Ictalurus punctatus*) is a freshwater fish, according to the FAO Aquaculture Information Program, it is said that catfish farming developed rapidly during the 1960s and 1970s and the commercial industry developed in the south Of the United States of America (RR, 2004). At the national level catfish production has increased, going from 4,434 tons in 2011 to 8,903 tons in 2014 (SIAP, 2014). In 2010 Sinaloa was the main entity of catfish cultivation when participating with the 25 percent of the national production (860 tons); Followed by Tamaulipas, 21 percent (707 tons); Durango, with 13 percent (426 tons); Michoacán, with nine percent (304 tons), and Sonora, with six percent (201 tons) (Conapesca, 2011).

As shown in Figure 1, for the year 2014 the main state of catfish was Guerrero with 21.89 percent of the national production (1,948 tons), followed by San Luis Potosí with 13.01% (1,158 tons), Sonora on 10.03 % (893 tons), Sinaloa (9.68%) (861 tons) and Tamaulipas with 7.91% (704.38 tons).



Graphic 1 Catfish production by state, year 2014. *Own elaboration. Source SIAP 2016.*

Puebla occupies the 17th place in the catfish producing states with a production of 43.6 tons, noting that 80% of this production comes from the Units of Aquaculture Production (UPA's), located in the Mixteca Poblana region, to date There are 16 Catfish Production Units located in the municipalities of: Jolalpan (7 UPA's), Chiautla de Tapia (2 UPA's), Chietla (2 UPA's), Tlapanalá (1 UPA), Izúcar de Matamoros UPA), Teotlalco (1 UPA), Coatzingo (1 UPA) and Piaxtla (1 UPA).

The Aquaculture Production Units mentioned above are in the process of being professionalized, the Catfish Product System Committee of the State of Puebla is in charge of training and advising them on technical aspects, but the management of these units is empirical, so they need to implement Administrative tools that allow them to control their resources, developing strategies to be competitive in the market.

These companies are integrated in a Civil Association called "Union of Catfish Producers of the State of Puebla", they are dedicated to commercialize the fish without giving an added value, however, they are already realizing the necessary tests to transform it and to commercialize it in different presentations to obtain a greater income, thus joining the agroindustrial sector.

The company "El Oasis" has no financial control, which has halted its healthy growth, the producer does not know if he really gets a profit because of the economic activity he develops. As a hypothesis, it is stipulated that an aquaculture enterprise must maintain a high production and crops of different species so that the income exceeds the total costs and a profit is perceived in each financial year.

Literature review

The Food and Agriculture Organization of the United Nations (FAO) defines aquaculture as "the cultivation of aquatic organisms both in coastal and inland areas, which involves interventions in the breeding process to increase production The United Nations for Agriculture and Food, 2016).

Aquaculture, according to Dr. Idyll, is "the technique that allows to increase the production of aquatic animals and plants for human consumption, through some control of organisms and their environment" (C.P, 1974). The issue of aquaculture has become relevant in Mexico in recent years, according to the magazine of the Chamber of Deputies, by 2014 "aquaculture has a food production per hectare three times higher than that of agriculture and livestock and a worldwide growth rate of around 30% per annum "(Chamber of Deputies, 2014). It also refers to the fact that this activity is of great importance both for food security and for the generation of jobs.

The aquaculture activity in Mexico has been disturbed when sanctioned by federal authorities, on the effects that it causes in the ecosystems when it is made a mismanagement of the same one. In 2015, the Federal Environmental Protection Agency (PROFEPA) initiated a program to comply with environmental regulations in the aquaculture sector, which would inspect the more than 9216 aquaculture production units registered in the country, Established in the General Law of Ecological Equilibrium and Protection to the Environment, of not doing so would be credited with fines (ACUÍCOLA, 2015). This becomes a threat to the capital of the aquaculture entrepreneur, lacking adequate sanitary controls and management.

There are studies that indicate the profitability in the catfish culture of channel where they estimate that the profit obtained per kilogram is from \$ 12.00 to \$ 15.00, in turn it is revealed that one of the main costs in the production, is the purchase price of the Food, to reduce it, producers must purchase it by volume to reduce said cost (Catre Michoacan Product System AC, 2012).

Concerning costs, "the purchase of land and the development of large pond complexes represent the highest fixed cost for catfish farmers. The highest variable cost is food, which typically accounts for 40-45 percent of the cost of operations, "according to FAO reports (R.R, 2004). In a similar thesis, it was found that the catfish farm that was studied in that specific case, obtained losses in the productive cycle analyzed, the cost benefit ratio was 0.73 in a first period and 0.91 in a second period Of production, which indicates that the company's revenues do not surpass the total costs, the reasons point to lack of control in the management of the feeding, excess of fixed costs, low production and lack of infrastructure (Jimenez Hernandez, 2008)

The profitability of a company or project is that the value provided by the yields is greater than the resources it uses (Companys Pascual & Corominas Subias, 1988). The cost is the monetary value of the resources that are delivered or promised to be delivered in exchange for goods or services that are acquired. At the time of acquisition, a cost is incurred (García Colín, 2014). Costs are "the sum of the expenses incurred by a natural or legal person for the acquisition of a good or service, with the intention of generating income in the future" (Ramírez Padilla, 2005). According to Ramírez Padilla, costs are classified according to their behavior in: variables, which are those that fluctuate directly with production and the fixed costs that remain constant for a time without being directly dependent on the volume of production. A company reaches its break-even point, when the total revenue it receives covers the total costs, so that the company will not have losses or profits, so to determine it is known as cost-volume-utility analysis (Garcia Colín, 2014). To determine if a company or project perceives a profitability, the financial ratio known as cost-benefit ratio is used, which shows the amount of money that returns for each monetary unit invested, when the ratio is equal to "1", the company does not. When the ratio is greater than "1" indicates profits and when it is less than "1", it represents losses (Herrera, Velasco, Denen, & Radulovich, 1994).

Methodology

For the present study a descriptive analysis was made, based on the information collected from bibliographical sources, interviews with the owner of the "El Oasis" aquaculture farm and field visits. Costs were classified according to their performance, that is, in fixed and variable costs, revenues were determined based on the kilograms sold at the sales price, a statement of results was elaborated, the cost-volume-utility analysis And the cost benefit ratio.

Results

According to field visits and interviews with the owner of the "El Oasis" aquaculture farm, the following information was obtained:

- The owner lacks professional training, runs his business empirically.
- The aquaculture farm has 2 ponds qualified to produce, 7 more ponds are under construction.
- The cost of the fry is \$ 3.00 and is purchased in the state of Michoacán.
- The entrepreneur considers that the sales revenues are his profits.
- The entrepreneur does not have adequate records of income and expenses.
- The current production capacity per pond is 400 kilograms.

A) Fixed Costs: The costs incurred by the company Oasis in a productive cycle (7.5 months) are shown in table 1, which highlights that the highest of these is the payment of salaries, calculated on the basis of the salary which workers receive at least in the Mixteca Poblana.

Concept	Amount per productive cycle
Administrator	\$ 23,040.00
Gas sales, deliveries	\$ 2,000.00
Electric power	\$ 4,800.00
Employees	\$ 19,200.00
Water	\$ 800.00
Telephony	\$ 800.00
Gasoline	\$ 3,200.00
Unforeseen	\$ 6,400.00
Amortization	\$ 7,826.67
Depreciations	\$ 3,883.83
Total	\$ 71,950.50

Table 1 Fixed costs per productive cycle. *Own elaboration*

B) Variable costs: Variable costs were determined according to the inputs needed for fish development. Table 2 shows the total cost corresponding to the purchase of the fry (catfish in the initial stage), food for the stage of Development and food for production stage.

Cost	Rode Per cycle
Food development	\$ 15,551.50
Food production	\$ 1,842.00
Juvenile	\$ 6,900.00
Subtotal	\$ 24,293.50

Table 2 Variable costs per productive cycle. *Own elaboration*

C) Sales revenue: The sales of the company begin when the catfish reaches maturity, starting in week 25. The revenues reported for the production cycle analyzed correspond to a production of 450 kg, at a price of \$ 80.00 the kilogram, obtaining a total of \$ 36,000.00 as shown in table 3.

	Month s 1-6	Months 7	Months8	Total
Bagre (kg)	-	300.00	150.00	450.00
Cost/kg	\$ -	\$80.00	\$80.00	\$80.00
Sales revenue	\$ -	\$24,000.00	\$12,000.00	\$36,000.00

Tabla 3 Ingresos obtenidos por ciclo productivo. *Elaboración propia*

C) Income statement: The information was concentrated in an income statement for the productive cycle analyzed, as shown in Table 4.

"The Oasis" Income Statement Productive cycle	
Customer Service	\$36,000.00
Variable costs	\$24,293.50
Gross profit	\$11,706.50
Fixed costs	\$ 71,950.50
Result of the excersice	-\$60,243.50

Table 4 Income statement by productive cycle. *Own elaboration.*

The income statement results in a loss of \$ 60,243.50, due to the fact that total costs exceed the income received.

D) Break-even point: the number of kilograms that the company must sell was determined in order not to have losses or gains. Obtaining the result that gives the formula 1.

$$P.E = CF / (1 - (CV/V)) \tag{1}$$

$$P.E = 71,950.50 / \{1 - (24,293.50/36,000)\}$$

$$P.E = \$221,261.69$$

The aquaculture production unit must sell \$ 221,261.69, to reach its break-even point. That is equivalent to selling 2,766 kilograms per production cycle, and currently only produces 450 kilograms, so it is well below its break-even point.

E) Cost-benefit ratio:

$$RBC = Beneficios / Costos Totales \tag{2}$$

$$RBC = \$36,000.00 / \$96,244.00$$

$$RBC = 0.37$$

The result of the cost-benefit ratio tells us that for each peso that was invested they recovered 37 cents, reason why it is losing 63 cents.

F) Projection: Now we calculate the projected net profit to a maximum production capacity, the company needs to use the 9 ponds (of which 7 are currently under construction), to reach a profit. When sowing fry in 100% of the ponds would yield a production of 3,600 kg, the proceeds would amount to \$ 288,000.00 (at a price of \$ 80.00 per kg), variable costs would reach \$ 196,202.46, while fixed costs would remain at \$ 71,950.00, therefore the net profit would reach \$ 19,847.04.

"The Oasis"	
Income Statement	
Projected production cycle	
Customer Service	\$288,000.00
Variable costs	\$196,202.46
Gross profit	\$91,797.54
Fixed costs	\$ 71,950.50
Result of the excersice	\$19,847.04

Table 5 Income statement by projected production cycle.
Own elaboration

Conclusions and recomendations

The aquaculture production unit generates losses in the current productive cycle due to the production in the same is low, with it only covers variable costs, fixed costs outweigh the income.

The employer does not consider or record the fixed costs, because the workforce is represented by his family, the electric energy is the same that is used for the home, ie there is no separation between family expenses of the expenses of the company. The contribution margin per kilogram is \$ 26.00, equivalent to 48% of the cost of production.

The company can reduce its variable costs, acquiring the food by volume, that is, in conjunction with the producers of nearby farms. To reduce the cost of the fry, it is necessary to have an incubator in the state of Puebla to reduce the cost of the same, since the cost of moving other states reduces profits.

In order for the company to generate profits, it must use 100% of its installed capacity.

The company must keep records of all expenditures and income, to maintain control of the same. It is necessary the participation of the education sector in this type of organizations, to achieve a professionalization in its activities and to be competitive in the market.

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