

Application of the Based Resources Theory in Agropark Ahualulco

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Introduction

This article with the use of concepts in simple neoclassical economic theory makes an attempt to show that Agropark Ahualulco in Mexico with all its constraints has scope for making profits by meeting the high potential demand. The profits of the company to be accumulated can be gainfully reinvested for realizing the goal of business growth. Therefore the significance of the management of the company for utilizing opportunities which are presently available becomes obvious.

According to Peng (2010) one of the basic proposals referred to the resource-based and capabilities' view is that a company is constituted by a series of material resources and productive capacities, giving differences in the performance of companies. Administrative economic sciences rely on various tools to expand their explanatory potential and perform more accurate analysis of how resources and capabilities are applied. Within these tools, mathematics is an indispensable support for the analysis of quantitative data.

Agricultural production companies have certain characteristics that make them interesting for the analysis of the implementation of the resource-based view and capabilities. Primarily it operates within a structure aimed at perfect competition. This analysis of mathematical models grounded in neoclassical economic theory is very useful for evaluating the economic performance of the company.

The aim of this article is to analyze the application of the resource-based view and capabilities to propose solutions to problems that may arise in the business AgroPark of Ahualulco in Mexico.

Background

According to an article by Maldonado (2011) in *Informador Newspaper*, an AgroPark is an agricultural and business model that seeks a uniform product quality of vegetables and an adequate volume for marketing

in good condition. It also focuses on distribution and marketing in order to maximize profits. This model has a competitive advantage due to its position as the first link in the value chain of horticultural products in Mexico. It is immersed in a complex network of a business model that is impacted by technological and logistical challenges, with the aim of mobilizing large volumes of products and thus it achieves the linkage with thousands of suppliers and millions of users (Casolco, 2014).

From a regional perspective, an AgroPark represents a successful type of business that marks a new stage in the field of Jalisco State in Mexico for marketing and vegetable production through a project known as AgroPark (Maldonado, 2011).

During the administration of President Gustavo Díaz Ordaz in 1964, it was implemented. It is one of the most ambitious projects for agricultural sciences in Mexico which lead to the creation of the so called Plan Chapingo. The Plan Chapingo coordinated to the National School of Agriculture (ENA) currently Autonomous University of Chapingo, the current Graduate College, the National Agricultural Research Institute (now the National Institute of Forestry, Agriculture and Livestock, INIFAP). The site selected for the building was the old Hacienda of Chapingo, State of Mexico, where it was located ENA since 1923. In 1969 was also in the same plan, quality protein laboratories of the International Center Maize and Wheat Improvement (CIMMYT) (Larqué, 2014).

Under the same plan was established the first city in the agricultural sciences in Mexico, or the first national AgroPark of Agricultural Sciences, a model of capabilities integration. The model of capabilities integration in the agricultural sector was centered on human resource training at high school, undergraduate and graduate levels, scientific and technological research in agricultural sciences, and agricultural

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extension and outreach. The successful model impacted internationally for the high demand of students who came to study at this AgroPark and where the first scientific research groups in agro sciences consolidated in Latin America. Larqué (2014) mentions that in the seventies and eighties, the model of Chapingo Plan defaced and comes to an end when the laboratories CIMMYT, the Graduate College and INIFAP migrated to other campus. However, that's how the agroparks started in Mexico.

Company Profile

In Jalisco State of Mexico, there have been three agroparks running in Tamazula, Etzatlán and Ferrería. These agroparks have been successful in terms of job creation and adoption of agricultural practices that have generated excellent returns with healthier crops and decreased risk of pests and diseases. AgroPark Ahualulco, Inc. de C.V. is inclusive enterprise of different corporations, societies and cooperatives interested in transcend the international market. AgroPark Ahualulco is a Mexican company that was formed in 2012 to address the need to innovate and produce higher returns (Medina, 2012).

The objective of this company is to harness the productive vocation that has the San Ignacio de Ojo de Agua, Municipality of Ahualulco del Mercado, Jalisco, establishing a strategic vision of long and medium term. Strengthen productive chains in protected vegetable in agriculture production to make them detonating regional development. Other important objective is to link and implement mechanisms to support tax incentives, credits, technology training and infrastructure grants to facilitate the development of business grouping.

The AgroPark produces pepper (*pimiento marrón*) in three red, yellow and orange varieties. These vegetables are sold per case of 11 pounds. The selling price of the pepper box is not determined by the bidder, to belong to a market that tends to perfect competition where price changes depend on observable market. During the last year the average price of a box of 11 pounds (first quality) is estimated at \$ 13 USA dollars to the average exchange rate of \$ 13.00 with a cost averages \$ 70 per box. With regard to productive

factors identified the most important factors in the production process are mainly capital investments, mainly the storage buildings, greenhouses and labor.

Quantitative Analysis

The production company is divided into different production halls. Each of these units has certain suitable for growing a variety of pepper in particular conditions. This information is important for understanding the approach to the problems of utility maximization considering to restricting the area planted to each variety. This part of the infrastructure represents the tangible assets of the company that lets it make its strategic production projections. Based on information in enterprise production cost functions are determined. According to the resource-based view and capabilities, cost functions are used for the productive capacity of this AgroPark Ahualulco.

The total cost function is used to determine the cost of production in a period, for the case study company, fixed costs was set by a monthly period.

$$\text{Total cost } (q) = 19.0882q + 144,255.5$$

With the marginal cost function, it is indicated the value of the increase in the total cost incurred by the increased production of an additional unit of a good, in this case it means another one box of pepper.

$$\text{Marginal cost} = 19.0882.$$

The variable cost function allows the company to make a representation on the part of the total cost incurred directly by changes in production, is composed of the costs and expenses that vary with the production of each box of pepper.

$$\text{Variable cost} = 19.0882q.$$

The fixed cost represents the portion of the total cost that remains constant regardless of variations in production. The fixed cost is composed of the costs and expenses that do not vary with production of each box of pepper.

$$\text{Fixed cost} = 144,255.5.$$

Market supply is the quantity of a good or service that a company is willing to sell for a period of time. As in the case of demand, supply does not measure the actual sales of the company, but its willingness to sell.

With this information, the company can determine how much to bid the pepper (pimento). Market demand is called the quantity of a good or service that a consumer is willing to buy during a period of time. What it measures is the "willingness to buy" of consumers, and not their actual purchases. Since each box has a different variety of pepper it has different price. The total revenue function is determined using a mixed price which is set using set percentages of production.

Based on the functions of the total cost and revenue it is derived the breakeven point. This point indicates the amount of sales needed by the company to get the fixed cost installed by the variable contribution margin per unit of products sold. In simple words, it is the amount of pepper boxes produced and sold where the company does not win or lose. The area that lies between the lines of revenue and costs below the

equilibrium point is called a deficit area and the area which is above a zone represents the financial gain.

Maximizing Profits of the Company Model

The firm AgroPark Ahualulco SA de C.V. is dedicated to the production of 03 varieties of sweet peppers, although production costs are much like the utility generated is different than shown below as utility function. The company faces the problem of deciding how much of each variety is to be produced according to its greenhouse capacity. Besides each of the sections are intended for the production of one variety of pepper. The implementation of the resources and capabilities of the company generates efficient allocations in terms of Pareto (Varian, 2010).

Table 1 shows how the company AgroPark Ahualulco is making efficient use of its resources and capabilities to maximize its profits.

Table 1: Maximizing Production

Color	Restriction per M2	Price per box (US)	Price per box (MX)	Cost per box	Utility	Minimum Demanded	Utility Margin
Red	16792.00	11.50	149.50	78.79	70.71	0.60	0.47
Yellow	3148.00	12.00	156.00	78.79	77.21	0.20	0.49
Orange	5060.00	13.00	169.00	78.79	90.21	0.20	0.53
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Source: Own elaboration with the firm's data.

The breakeven point of market equilibrium, where supply equals producer consumer demand is $P = Q = 192.78$ and 2604.42 . These data allows calculating the consumer surplus and producer surplus. The consumer surplus which is consuming 54,072.98 pesos, if it is divided the price of a box by the equilibrium \$ 192.78 determines the boxes that the consumer is willing to purchase, which in this event for the company AgroPark Ahualulco is 281 boxes.

The producer surplus is calculated in \$ 418,761.08 divided by the price per box of 11 pounds which the producer is willing to produce a surplus of 2,172.22 boxes. Under the consumer surplus and producer surplus calculated, it is concluded that the producer can completely cover the consumer surplus maximizing deployment of its resources and capabilities.

Analysis of Results

Based on the quantitative data collected and having applied the theory based on the resources and capabilities, relevant information was obtained for the decision of the owners of AgroPark Ahualulco SA de C.V. The knowledge generated by this research gives them more accurate and credible tools with which to more deeply understand their business. Dominating widely the knowledge about resources and capabilities will really have to make better decisions on the efficient use of these. With the data collected in the company has estimated the total cost function which consists of variable cost and fixed cost. Mathematically the following function is obtained:

$$TC(q) = 19.0882q + 144,255.5$$

According to the microeconomic theory (Varian, 2010), from the total cost function, it can be obtained the marginal cost, which means the marginal cost of producing an extra box of pepper, deriving and differentiating the function. On calculation the Marginal Cost is expressed as follows:

$$MCg: 19.0882$$

Likewise were generated with the corresponding estimates, the demand function facing the AgroPark. The mathematical expression is as follows:

$$D(p) = 14697.35 - 62.72836p$$

This calculation proceeded with the corresponding operations and transactions to also obtain the supply function that has the firm. This function is extremely important in this analysis because it reflects the ability of the firm to compete in the market with prices. If the function obtained high coefficients of the firm does not have significant capabilities to compete on price in the market. The supply function is obtained as follows:

$$O(p) = -2079.477 + 24.29618p$$

Matching functions are performed to determine the quantity and price that achieves market equilibrium for the firm, i.e., where the meeting point is located between the interests of profit maximization of the firm based on its capacity and productive resources and where consumers accept the same amount offered at the same price.

The corresponding calculations are performed and the amount and the market equilibrium price obtained are 2604.42 boxes of pepper and 192.78 pesos respectively. Based on the above it is noted that the production capacity of the firm allow it to compete efficiently when the applicants are willing to pay a price not less than 192.78, the company can offer a total of 2604.42 pepper boxes. If another producer will be in a position to offer the same amount of product at a lower price than the above, the AgroPark will be at a disadvantage.

According to the results obtained from the Tora program to achieve utility maximization is required to produce 15112.80 of red pepper boxes, 2833.20 of yellow pepper and 4,554.00 orange peppers. Finally, the consumer surplus is fixed at 54072.98 and producer surplus = $418,761.08 / 192.78 = 2172.22$ boxes.

Conclusion

First, despite being a new company, AgroPark Ahualulco SA de C.V. operates efficiently. The business in the current operating point generates positive benefits based on the efficient use of resources. The Company makes good use of its installed capacity.

Second, the break-even point indicates that Ahualulco AgroPark products have a high margin of profit contribution. This works as a reserve against the normal risks that companies in the agricultural field have.

Finally the possibility of stagnation in production is identified. It can be concluded that there is a high potential demand. If this demand is met there is bright scope for making profit. The reinvestment of profit would result in business growth.

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