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Analyzing the Micro Economic Environment of Agricultural Product: Applying The "Diamond" Model to a Non – Profit Organization

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Abstract

The main objective of this paper was to explore environmental factors affecting the success in terms of helping small scale farmers to participate in high-value market by employing Porter's 'Diamond model'. The environmental factors that enhanced competitiveness of the Bresse chicken cluster managed by a non-profit organization - the Royal Project Foundation - to help farmers gain income in Thailand were illustrated. According to the analysis, four favorable environmental factors consisted of factor conditions - human and knowledge resources from universities and research units, material and financial resources, and well developed infrastructure. The knowledge and requirements of customers to improve quality as well as an increase in demand were the factors in the attribute of demand conditions that had impacts on the advance of the cluster. The favorable factors in the attribute of the supporting departments consisted of the presence of a relevant cluster, and pull of supporting organizations. Furthermore, backward and forward integration and facility for joint working were the strategies that helped the project gain the advantage. The factors affecting the improvement in the cluster performance created by the government were import tariff and financial supports, and the chance that provided opportunity to the farmers to gain from this market was the growth in tourism sector. The existing environmental factors that provided opportunities for farmers to compete and participate in the high-value market resulted in an income generating.

Keywords: Farmers, Porter's 'diamond model', agricultural product, competitive advantage

Introduction

Small-scale producers in remote areas are facing new opportunities and challenges related to an increasing in demand for high - value of agricultural products in many developing countries (Kaboli and Zou, 2011; Rota and Sperandini, 2010). An involvement in such the markets is the Challenge for farmers to gain income from available resources (Kassam *et al.*, 2011). To help farmers gain competitiveness by enhancing their participation in this emerging market, cluster management is suggested and has been proved to be an efficient approach. Clustering helps small scale farmers overcome such obstructions as the lack of production techniques and technology to attain the standards demanded in markets, as well as empowers their marketing management (Kassam *et al.*, 2011; Kaboli and Zou, 2011; Davis,

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2006). Evidences can be seen in the cases of aquaculture clusters of farmers in India and Thailand (Phillips, 2011). The successful clustering can be organized through the farmer cooperatives as found in Pakistan (Cooperatives for safeguarding interests), India (The cooperative venture of dairy sector named Amul), Japan (One Village One Product (OVOP)), or Sri Lanka (Local Competitive Advantage (LOCA)) ("Need for cluster initiatives in agriculture", 2012). However, according to Porter (1998), competitive advantage of clusters is strongly influenced by business environment in which they operate (Porter, 2000). Porter (1990, 1998) reveals that major focus of clusters is strategy development for more competitiveness; meanwhile the advantage of competitiveness arises from the interaction of business environment. Four major factors affecting the success or failure of clusters are factor conditions - the existence of specialized factors; demand conditions - the existence of sophisticated demand of local customers which force companies to increase product quality or differentiation; the context for firm strategy and rivalry; and related and supporting industries (Porter, 1998 cited in Paterson, 2005). Furthermore, there are two related factors that affect the interaction among the four major factors; those are government and chance (Porter, 1998 cited in Leech, 2011).

Since clusters advance through four broad attributes and two related factors which are business environment in which companies operate and influence the firms' ability to innovate and upgrade. The results from Diamond model analysis provide information on why some regions are more competitive than others (Woodward, 2004). While Solvell *et al*. (2003) also argue that the micro-economic business environment, represented in the Diamond model, acts as an engine of cluster and innovation and plays an important role in driving innovation and upgrading firms' competitive advantages. The interaction of the factors has been used to answer the question 'why certain industries are more successful than others'. Therefore this paper intends to investigate environmental factors affecting the success at the firm level of an agricultural product by employing Porter's 'Diamond model' and the cluster of Bresse chicken managed by a non-profit organization - the Royal Project Foundation-was selected to be a case study. The project has success experiences to link small-scale farmers to the high end market via cluster management which results in a high income generation for farmers who raise this type of chicken (Khuntonthong *et al*., 2013). The major objective of this paper is to diagnose the environmental factors that influence competitiveness and advance of the cluster which help small scale farmers to participate and generate income from the high-value market. An exploring of business environment that affects the success of the cluster can provide information for decision makers to create supporting factors to help small scale farmers to overcome obstructions which results in advantages to produce and sell the product for farmers in the competitive markets. This paper is divided in to three main parts. Firstly, background of the Royal Project Foundation and the cluster of Bresse chicken were revealed. Secondly, theoretical of Porter's works employed in this study is mentioned followed by the methodology of the analysis. Thirdly findings were stated in the results and conclusion.

Background of the royal project foundation

The Royal Project Foundation is a non-profit organization, established in 1969; by His Majesty the King of Thailand to promote temperate cash crops to farmers living in highland areas and to help to promote a market for crops in Thailand and beyond. The Project facilitates collaboration between the Thai government, foreign governments, universities, as well as public and private

agencies. The Royal Project Foundation's remit has emphasized research and development, which led to the substitution of opium with commercial crops. This has enabled hill tribes in growing useful agricultural products, allowing them raise their living standards (The Royal Project Foundation, n.d.). Appropriate cash crops and agricultural technology derived from the Royal Project Foundation research have been introduced to farmers as a result; they have been motivated to live in highland areas, without destroying forests. Currently the Royal Project administers 38 satellite branches situated in Chiang Mai, Chiang Rai, Mae Hong Son, Lamphun, Phayao and Nan provinces. There are 13 ethnic groups, which comprise 30,537 families or 151,277 people (The Royal Project Foundation, 2011). The project purchases all promoted products from the farmers and markets the products for them. A stable income for farmers under the project is currently being maintained mainly from fruit and vegetables.

Bresse chicken is one of the promoted products of the project. It is a special variety of chicken given to the Royal Project Foundation by the Bresse Chicken Association, France, with restricted conditions to prevent other Thai organizations from producing it. The Royal Project Foundation produces and retails this type of chicken exclusively in Thailand. Therefore, it has a unique selling point which has potential to be leveraged by the Royal Project Foundation. The cluster of Bresse chicken is strong and successful as it enhances farmers to produce good quality of chicken and supply to the high – value product market. The major factors affecting the success are the presence of strong functioning networks and continual support from organizations in the cluster. The main outcomes of the Bresse chicken cluster are increasing in farmers' capabilities and high income providing. It provides high return profit which is additional income as the Bresse chicken is raised as a part time job. The profit gained by farmers is about 80.50 Thai baht per kilogram. An average number of reared chickens in a household are 150 chickens per year, and the average weight per live chicken sold to the project is about 2.5 Kg. Therefore, one farmer receives a profit from this product of approximately 30,187.50 Thai baht per year which is above the national poverty line[1]. The increasing in farmers' capabilities is from the supports of various organizations that enhance farmer's abilities to overcome the weakness of scarce resources, as well as increasing participation in the high value market to small scale farmers (Khuntonthong *et al.*, 2013).

Theoretical background

This section is a theoretical review which is based mainly on the works of Porter. The related literature is reviewed to generate a better understanding of the analysis conducted in this research. As Porter (1998) characterizes cluster into two levels (Porter, 1998). Firstly, at the macro-economic level (government's view), its objective is to improve competitiveness of a nation in world markets. The significant factors of this level are government policy, industrial promotion, law and regulation. Secondly, at the micro-economic level (enterprise's view), the aims are to improve innovation and productivity of enterprises. In the micro-level each firm performs different levels of upgrade or innovation, the Diamond model analysis is a framework that helps to explore the effects of the micro economic environment to the success or failure. The level of the economic analysis in this study is set at the micro-economic level. Four main factors and two related factors affecting the competitiveness of the firms are revealed as follows:

[1] Thailand poverty line is equal to an income which is less than 1.71 US dollars per day:
Source: http://www.thepovertyline.net/map

Factor conditions

The factor conditions consist of the created factors that provide initial advantages. The factor advantage can arise from highly specialized pools of skills, applied technology, infrastructure and sources of capital as well as qualification of human and knowledge resources that are the needs of particular industries (Porter, 1998). The abilities of organizations in accessing specialized inputs allow competition to take place. These environmental factors are also defined as the created factors, not inherited ('Porter's Diamond Model & Clusters', 2007).

Demand conditions

Demand conditions influence the shaping of particular factor conditions. Local customers are more likely to stimulate improvement and innovation than distant customers because of the high visibly, a short line of communication and an opportunity for joint working relationships. Demand conditions in home markets can help companies create a competitive advantage, when sophisticated home market buyers pressure firms to innovate faster and create more advanced products than those of competitors. By meeting such demand, local companies can gain competitive advantage in foreign markets. According to Porter (1998), demand has been determined by three major characteristics: mixture (the mix of customer's needs and wants), scope and growth rate, and the mechanisms that transmit domestic preferences to foreign markets (Porter, 1991, 1998; 'Porter's Diamond Model & Clusters', 2007).

Related and supporting industries

Related and supporting industries can produce inputs which are important for innovation and internationalization as well as provide cost-effective inputs. The presence of related and supporting industries provides innovation and product upgrading based on proximity and close working relationships. This helps stimulate companies in the chain to innovate. When there is a presence of effective supporting industries, the ability to access sophisticated suppliers of materials, components, machinery, services and information are needed for competitiveness. And when the cluster has been formed it helps to raise interconnected companies and institutes, which results in members' benefit from the ease of pursuing relationships and form the ability to source specialist components, personnel, and service.

Firm strategy, structure and rivalry

Firm strategy, structure and rivalry are based on the outputs of rivalry and context of a region's influence. The ways in which companies are created, set goals and managed are important for success. The presence of intense rivalry within the firm's home base is also important as it creates pressure to innovate in order to increase competitiveness. The rivalry forces competition to lower costs, improve quality, and creates new products and processes which leads to an extension of their geographical reach. In different regions, factors like management structures, working morale, or interactions between companies are differently shaped. This can provide advantages and disadvantages for particular industries.

Government

Government can influence each of the above four determinants of competitiveness. A government can influence the supply conditions of key production factors, demand conditions in the home market, and competition between firms. The interventions from government can occur at local, regional, national or supranational levels.

Chance

Chance events are occurrences that are outside the control of a firm. They are important because they create discontinuities in which some gain

competitive positions and some lose. The significant shifts in key factor costs are events such as wars, or other significant economic, or political dislocations.

Methodology

The study was conducted using both primary and secondary data. Primary data was collected using semi-structured questionnaires to interview the project's staff, which consisted of the production unit, purchasing unit, sale manager, as well as experts from academic organizations who worked in the project as volunteers. The questionnaires were designed for each actor to get the answers. Three stakeholders from the production unit, the head of the unit who was the expert from the university, manager, and a specialist were interviewed to figure out the answers of product extension and development. Information related to marketing research and management was collected from four people involved in marketing unit. They were marketing managers of two head offices of the project in Chiang Mai province and Bangkok, product purchasing manager, and an expert from private company who worked as volunteer. The staff of the project's research unit was also interviewed to get the answer of research policy as well as data related to knowledge and fund supporting. Finally, the customers who purchased the products, such as chefs in five star hotels, were also interviewed to collect data regarding customers' demand. The aggregate number of customers, who purchased 50% of total sales, was sampled through interviews.

Semi-structured interviews were employed to collect data from each group of stakeholders as shown in Figure 1.

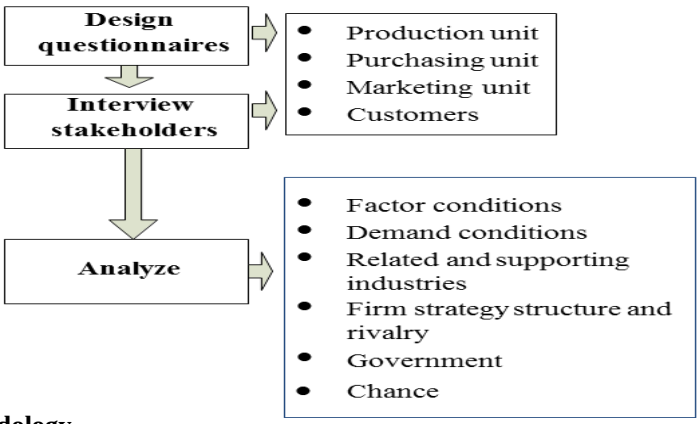

Figure 1: Methodology

Secondary data was collected from the project's report and the statistics databases of government organizations. Project data included information such as past sales data, product costs, and farmers' profit under the project. National statistics were the imported value and volume of products, regulations, and data from the hotel and related sectors. Finally, environmental factors affecting success in terms of helping small scale farmers to participate in the high value market were investigated.

Results

The favorable environment factors that enhanced the advance of Bresse chicken cluster were shown in figure 2. The details of each factor were described in the following section.

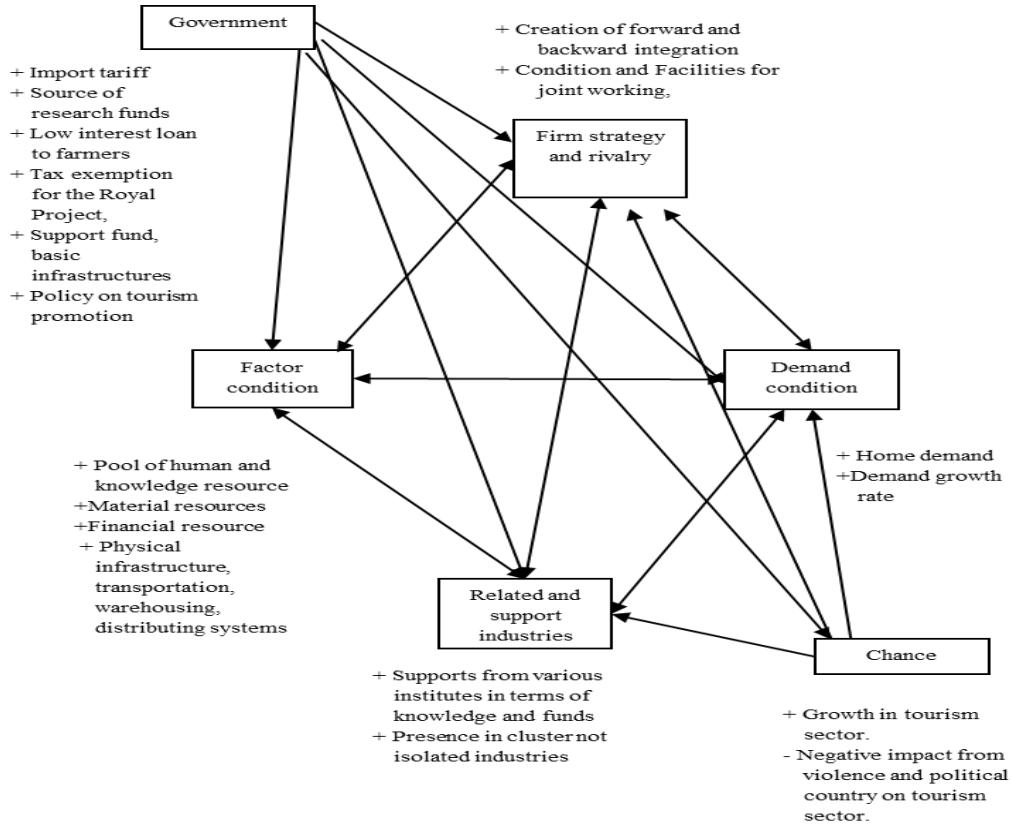

Figure 2: **Diamond model of Bresse chicken managed by the Royal Project Foundation**

Factor conditions

Human and knowledge resource, material and financial resource, and well develop infrastructures were the factor conditions that helped the Bresse chicken cluster gained advantage in producing and marketing. Human and knowledge resources were the major factors that helped the project developed this exotic crop in the country successfully. Since there were two universities located in the same province of the project and both of them had expertise in agriculture. At the same time, the project had a significant reputation of having been established by His Majesty the King; and the project could create a short line of communication among the experts from the universities. These provided opportunities for joint working relationship between the project staff and the experts which resulted in the advances in terms of product development and marketing management. Further, its reputation was also a major factor that influenced the involvement of experts from private companies to help in the area of business and marketing management. The specialists and experts, as chefs of the five star hotels, and traders joined the project as the volunteers to give information and knowledge to develop the product and manage the market. In terms of material resources, the project promoted Bresse chicken to farmers who were in the areas that had internal inputs such as medical herbs (used as vaccine for chicken), defective vegetables (feed for chickens), and natural feed in grazing areas (earth

worms, insects). These resources helped increase the quality of chicken meat and reduce the costs of production. As a non-profit organization that aimed to help farmers in remote areas, the project received support in terms of funds and basic infrastructures directly from the government. The well-developed basic infrastructures as cool transportation system and cool warehousing gave opportunities to the project in distributing good quality of produces and marketing availability products to customers efficiently. Those were the factors that helped the project to produce and supply good quality of agricultural products which became the advantages of the competitiveness in the high-value market.

Demand conditions

Past sales data indicated that the high-end restaurants had a maximum market potential due to the ability to absorb the high price of Bresse Chicken. The main groups of customers who were foreign chefs had knowledge in this type of chicken and their requirements on the specialty qualities were the catalysts that impacted to the product development over time. In order to develop the product to meet the requirements of the customers; however, the project could use an advantage of knowledge supporting from experts of research and academic organizations to achieve its objective of product development. Whereas, the demand for Bresse chicken tended to increase, since, it sales volume had increased dramatically. The sale amount of Bresse chicken had increased from 150 kilograms in 2009 to 4,679.7 kilograms in 2011. Valuable information from customers and an increasing in demand for the chicken were the factors that impacted to the advance of the Bresse chicken cluster to develop product as well as expand market which helped the farmers to gain income from this type of chicken.

Related and supporting industries

There were 16 government and non-government organizations involved in Bresse chicken cluster and they supported finance, knowledge and management. The experts from those of organizations jointed working with the project as volunteers. The platform for information sharing had been arranged monthly among the project's director, volunteers and the project staff to share information, solved facing problems as well as updated and monitored the vision of the project. These helped to strengthening the cluster of Bresse chicken which was the key factors to manage the cluster successfully. The related and supporting organizations had direct impacts on product development and market management. The presence of strong relevant actors in the cluster as financial actors who supported fund in terms of low interest rate loan provided opportunity to farmers who usually had difficulty to access source of fund to invest the farms. Meanwhile the academic and research units helped to support useful information and knowledge to develop and market the product. The continuing supports from government in terms of fund for running the project's tasks were the significant factors that helped the project to manage the product and enhance farmers' abilities to produce and compete in the high value market.

Firm strategy, structure and rivalry

As a non-profit organization, the strategic objective of the project focused on providing helps to the poor farmers in remote areas. The project was not required to show financial surpluses, but just needed to generate enough income to cover its costs as staff compensation and utility bills. Its images of helping the poor farmers in remote areas, and ti's having been established by His Majesty the King were significant factors that helped to gain advantage from various supports. Apart from its images, the successful management in terms of helping farmers

gain income was a factor that induced the continuing financial supports from the government as well as in-kind donations as knowledge transferring from academic and non-profit organizations. Furthermore, supporting organizations as universities or government had policies to support the project and allowed their staff to work as volunteers. This condition of joint working provided opportunities and availability to the Project to gain advantage from the strong linkage.

The project could create backward and forward integration along the supply chain to manage Bresse chicken successfully from the supports of government and gained market opportunity from its images. The integration potentially offered advantages in terms of close supply chain coordination, and provided more opportunities to differentiate by means of increased control over inputs, and increased entry barriers to potential competitors which impacted the low rivalry in the market.

Government

Government played significant roles in supporting, especially in terms of finance and basic infrastructures to the cluster. All subsidies along the supply chain such as basic infrastructures, inputs, knowledge and technology to produce and market the chicken were the factors influencing the advance of the cluster. By the supports from government, the project could create vertical integration along the supply chain of Bresse chicken, and this helped to collect and market the product effectively from the close link between farmers in remote areas and customers. Apart from the effective management in the supply chain the significant factor that enhanced ability to develop the product was the research fund supported directly from the National Research Fund of Thailand. This allowed the project to develop the product as well as to solve problems of production. The protective tariff of imported Bresse chicken which was equal to 30 – 60 % of imported value was a major factor that caused difficulty to the importer to compete in the market. For the small scale farmers the government also provided low interest loan via the government bank which was a significant factor for farmers who usually had difficulty accessing the fund. This was opportunity for farmers to invest in their farms which resulted in an income generating. Finally, since the major group of Bresse chicken customers was the restaurants, therefore the policy on tourism promotion of government tended to have positive impact to the sale volume.

Chance

The factor as chance are those outside the control of the Royal Project Foundation, and in the case of the Breese Chicken, the growth of tourism sector in Thailand was the chance that impacted the cluster both positively and negatively. Since the main market channel of Bresse chicken was the restaurants and its sale volume peaked in tourism season, therefore the market growth of Bresse Chicken depended on the growth of the tourism sector. Whereas the violence and political sensitivities in the country are negative impacts on the tourism sector, these became indirectly negative impacts to the sale volume of the Bresse chicken.

Conclusions

In this study the Diamond model analysis was employed in order to explore impacts of environment that caused innovations for Bresse chicken cluster to be implemented which resulted in the increase in competitive advantage of the Royal Project Foundation and farmers under the project. It was found that the competitive advantages of Bresse chicken cluster were influenced by many business environmental factors. Those of favorable environment provided opportunities for small scale farmers to produce and supply good quality of the chickens to target

markets. In the context of Bresse chicken cluster, the government and academic organizations played significant roles for enhancing its competitiveness. Since this product was sold as premium quality at the high price, in order to supply an exotic chicken to meet the requirements of the knowledgeably customers, capabilities of farmers to produce the product that met the required demand were very important. Production know how transferring from the university experts helped to enhance skills of farmers which helped to address the competitiveness advantage for the farmers who raised Bresse chicken. Moreover, the policies of government as protective tariff of imported chicken and tourism promotion as well as the government' supports which gave opportunities to the project to create backward and forward integrations in the supply chain enhanced capacities for the project to gain competitive in the market. All of those factors helped farmers to generate income from the high-end market linkage.

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