Using Porter's Five Forces Model for Analysing the Competitive Environment of Thailand's Sweet Corn Industry

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ABSTRACT

The competition in Thailand sweet corn industry relatively high: Bargaining power of suppliers: supplier concentration, availability of substitute input, importance of suppliers' input to buyer and importance of industry to supplier; Intensity of Rivalry of rivalry among existing competitors: number of competitors, augmented capacity in large increments, value of fixed costs and exit barriers; Threat of entrants or potential competitors: economical scale; Determinant of buyer power: product differentiation, switching costs to use other products, switching costs to use other products and buyers' use of multiple sources, threat of substitute products or services relatively low.

Keywords: Environment analysis, Competitive Forces, Competitiveness Porter's Five Forces, Sweet Corn, Agribusiness

1. Introduction

Sweet corn is a major economic agronomy in Thailand. There are large amounts of consumption and utilization of sweet corn each day. The sweet corn is a perennial plant providing greater values to fresh markets and industrial factories. Recently, sweet corn is one of the most popular crops; the 2011 Thai Food Processors' Association report revealed that there were 29 factories of sweet corn manufacturers, and 64,000 hectares of plantation areas, and more than 35,000 farmers involved. Producing 544,000 tons of sweet corn, Thailand ranks third worldwide, with a 190 million USD increase from the year 2010, and an export value of 170.26millionUSD. From January to August 2012 exports value 94.67 million USD. The top 5 import countries include Japan, Russia, Korea, Taiwan and Germany.

Frozen Sweet corn in the year 2011 was worth 15.8 million USD. An increase from the year 2010, and has a value of 329 million bath. From January-August 2012 trade data export was 7.33 Million USD.(Yearly average exchange rates Thai baht convert to US dollar in 2011=30.29 and 2012= 30.90) (TMC,2012). As a result, sweet corn has become the industrial crop that many investors are paying special attention to. However, the sweet corn factories in Thailand face problems related to the competition of raw materials and difficulty of the plantation areas, due to its low profit compared with other industrial crops, such as rubber trees and sugar cane. In addition, the government provides no subsidy for sweet corn production. Furthermore, the Thai manufacturers have to compete with manufacturers from foreign countries, who receive taxation exemption as part of free trade agreements, and also contend with European Union anti-dumping regulation.

A study and estimation of business competitive environment assists in evaluating factors contributing to competitive ability and success. The organisation needs an analysis of internal and external environments, and an adjustment according to such varying environments. This assists in making a profit and utilising business opportunities which derive from creating prominent features in the business and competition. The superior factors over manufacturers conduce to the organization's competency and competitive advantages (Porter, 1990). Porter (1985)suggests an analysis model for 'Competitive Environment' called 'The Five Competitive Forces'. This model shows the ability of existing and new-coming manufacturers, as well as customers' needs. This will prevent customers from directing attention to substitutes. The organisation can also cooperate with raw material distributors. This concept can be used in a competency analysis of the sweet corn industry, and factors

affecting an analysis of types of the industrial competition. Results from the analysis will be valuable to the organisation for setting up completive strategies

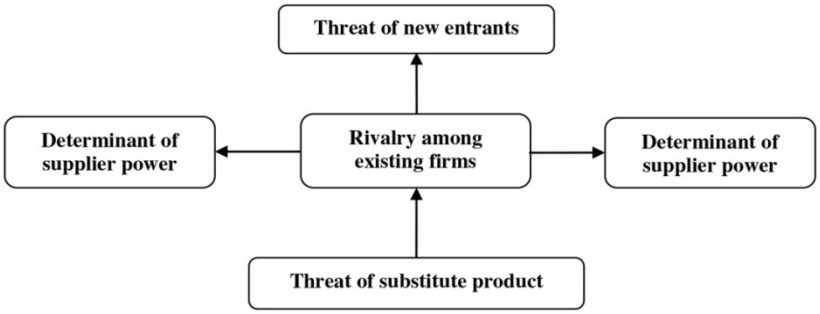
As for competitive capability analysis in Thailand's canned sweet corn industry, Thailand OIE.(2011) had conducted a study under this topic examining factor conditions; demand conditions of product s and services; firm strategy, structure and rivalry; and related industries which support the roles of government. The study adopts the Porter's Diamond Model as the conceptual framework. This framework indicates the competitive capacity of the entrepreneurs of Thailand's canned sweet corn industry under dynamic trading circumstances. A change in propulsion affects other related factors (Porter, 1990). The study shows (1) firm strategy, structure and rivalry – positive factor: an adjustment by seeking for new markets and decrease the dependence from the European Union. Negative factors: Thai entrepreneurs compete against one another by price reduction; Global market faces highly influential manufacturers – France and Hungary. (2) Factor conditions – positive factors: an all year round corn cultivation, advanced technology, and constant genetic improvement researches. Negative factors: few major manufacturers promoting contract farming with minor farmers; and high production costs. (3) Roles of government – positive factors: the Ministry of Agriculture and Cooperatives has an organic policy supporting global market's agreement; and the government passed legislation to maintain global market's standards. Negative factor – an unsuccessful negotiation for measures of anti European Union's dumping. (4) Demand conditions – negative factors: 95% of export market is European Union; and trade barrier measures increased. (5) The roles of chance – positive factor: many countries import from Thailand due to a decrease in US's cultivation for alternative energy.

The cause of business recession is an inability to manage the organisation's internal environment to conform to the rapidly changing external conditions (Phillip,2003). Suhong Li (2002) suggests an utilisation of competitive force to inspect the supply competency, and a concentration of the instability of environment. Suhong Li divides the instability of supply chain into four aspects (1) customer uncertainty – customers' needs and tastes are difficult to predict; (2) supplier uncertainty – quality of products and delivery ability are unpredictable; (3) competitor uncertainty – competitors' actions are unpredictable and; (4) technology uncertainty – technology development is unpredictable. Some aspects of this perspective are similar to Porter's Five Competitive Force Model. However, Porter instead considers obstacles harmful to the business whilst Suhong Li focuses on the uncertainty of the four aspects.

According to this notion, entreprenuers who are not aware of the competitive forces are not able to promptly design a defensive plan for rapid change. Therefore, adopting Porter's Five Competitive Force (1985) for analysing sweet corn industry will help in strategy development for future competition.

2. Theoretical Framework

Competitive force is a factor influencing organisation's contest within the industry and market (Business dictionary, 2009) Small and medium entrepreneurs can soundly demonstrate Porter's principle of competition intensity. The basic consequences derive from the industry. The competitive force from both internally and externally contributes to performance (Liang et al., 2007). Direct consequence of the competitive force contributes to strategy making and organizational activities (Low and Cheng, 2006). Study of competitive conditions in the industry depends on five crucial factors called "Five Forces Model" proposed by Porter (1985). The Five Forces Model includes analyses of the bargaining power of suppliers, the threat of entrants or potential competitors, the threat of substitute products or services, the bargaining power of buyers or potential customers, and the intensity of rivalry of rivalry among existing competitors (Porter's Five Forces Model diagram as Finger1). Questions asked by Cole Ehmke et al. (2008) are integrated with the Five Forced Model for a better understanding of the industry environment; a comparison of rivals for business obstructions, advantages and disadvantages in technology, production and quality. The evaluation determines the continuation, termination or development of the business.



Finger 1. Porter's Five Forces Model diagram (Porter,1985)

3. Methodology

Objective of the Study:to analyse the competitive force within the sweet corn industry. This study employs an integrated method of qualitative and quantitative researches to examine the competitive force in the sweet corn industry in Thailand. Purposive sampling is adopted. Executives of 12 sweet corn manufacturers from 29 manufacturers in Thailand were chosen. Quota sampling according to region is then adopted to determine the number of factories for this study. The data is an analysis of sweet corn and products according to Porter's Five Forces Model. The data collection includes an in-depth interview combining an interview schedule with semi-structured open-ended questionnaire in a personal interview. These questions are set within Porter's Five Forces Model incorporated with an impact analysis of factors. A score of 1 is given if a factor is considered effective, and 0 is given if the factor is ineffective. Mean score is then determined. The factors verified as influential to current/future business's success or failure receives higher mean scores. The probability score is subsequently given in order to consider the current possibility of the manufacturers facing the competitive force. Score levels are between 5 (highest possibility) and 1 (least possibility). The effectiveness score and the possibility score are multiplied to find the weighted score (Jeerasak, 2011) in order to determine the competitive force that is most influential to the industry.

4. Results

1. Threat of new entrants – new entrants result in higher competition for existing manufacturers. The competency of new entries depends on the level of the existing manufacturers' difficulties. Today, Thailand has 29 sweet corn manufacturers. This presents a low level of obstacle for new manufacturers. Barriers for entering the sweet corn manufacturer can be analysed as follows;

1.1 Economics of Scale – effectiveness score: 0.92, possibility score: 4.58, weighted score is 4.20.Economy production is difficult to achieve due to two major factors; high cost for capital and insufficient amount of raw materials. New competitors will face major pressure as a result of capital issues in order to compete with existing competitors who have more advantages in production, raw materials, marketing, and selling means. The existing manufacturers are able to reduce production costs to prevent new competitors from entering the industry. The new manufacturers may not be able to reach the desired target and match the exiting manufacturer s' production cost as there are risks for unsold products, and depreciation costs. However the existing manufacturers have anticipated the depreciation costs as well as being more experienced in the market. The newcomers must have strong marketing plans to attract buyers. The production of large amounts when newly entering the industry is a difficult task. Stable costs for sweet corn production include:

1.1.1 machinery employed: husker, corn cutting machine, flotation washer, seaming machine, and sterilizing machine (which can be divided into two groups – still stream retort and static retort). The sterilizing machine is a non-mechanism machine transporting packages for sterilization. Sterilizing vessel can be horizontal retort (steam as heating medium) and rotary retort (rotating track moving packing inside for better ventilation. The latter is more expensive which offers sharper colors but less flexibility. Boiler is a machine for sterilization. Chiller and cooling tower are for reducing water temperature. Water and electric supply machines are also essential. Most

manufacturers rebuild old inefficient machines in order to lower the production cost. However this often causes mechanical downtime and higher repair and maintenance costs.

1.1.2 Area needs to have a large warehouse for both made-to-order and made-to-stock products. The area is important for labeling products and it has to be separated into smaller areas for restricted area – for cooling sterilized products; incubation area – a 14 day stocking area for microbe examination; storage area – for quality checked products await delivery; labeling and case packing area – for labeling and packing awaits loading process; and loading area – for loading products into vehicles. Furthermore, the processing room has to be food processing hygienic.

1.1.3 Location – the factory should be in the area of sweet corn growers for enough sweet corn to reach breakeven point in production. In Thailand, there are 9 factories located in the northern part of the country while 14 are in the central and western parts. There are only 2 in the eastern part and 4 in northeastern Thailand. They can be divided into two groups – strictly sweet corn Manufacturer, and sweet corn with other types of fruits and vegetables. The major issue of this business is an inconsistency of fresh sweet corn. Therefore the choice of processing other types of fruits and vegetables helps in saving costs.

1.2 Product differentiation – effectiveness score: 0.25,possibility score: 3.50, weighted score is 0.88. Most manufacturers produce identical products and are original equipment manufacturers (OEM). They do not have their own brand. Those who have their own brand produce for domestic consumption and are a very small scale compared to the whole production. Sweet corn products can be divided into four groups: whole corn kernel, corn on the cob, cream styled corn, and frozen whole corn kernel. Whole corn kernel can further be divided into two groups: whole corn kernel in brine, and whole corn kernel in vacuum pack (Codex ,1981; Campden,2008).

The aspect which differentiates products is quality. This includes appearance, texture, and packaging. It is found that products being quickly sterilized by the rotary steam retort machine gain sharper color than ones being sterilized by the still steam retort machine. The texture of corn depends on age of corn when harvested and the type of corn. There are three types of packaging; metal package (e.g. Malee Sampran PCL. uses "Quantum cans", Siam Food PCL. use "Retort pouch" and Siam Delmonte Co. use "Tetra recart").

1.3 Capital requirement – effectiveness score: 0.75, possibility score: 4.08,weighted score is 3.06. Sweet corn business is fixed assets with 50-100 ton/day production capacity having more than 3.33 million USD/day investment fund. If they need more than 100 ton/day production capacity, more than 5.0 million USD/day investment funds are needed with 100-200 million baht/day revolving fund, and an extra 3.33 million USD/day revolving fund for raw material and packaging purchase. This is considered a low fund when compared with other industries. Therefore new entrepreneurs attempt to enter this industry, use existing production capacity to the Maximize, and able to produce fruits and vegetables all year round. New manufacturer may face risks, such as investment in machineries, area and location, raw material system development, and quality management, research and product development, as well as inventory management resulting in high operating costs. Although the sweet corn business does not require a high investment fund, new manufacturers are often reluctant to invest, as there is a risk of not being able to breakeven. Most existing manufacturers have faced liquidity and investment reward issues. For example, River Kwai International Food Industry Company(RKI) was taken over by Agripure Holding PCL. (SET.,2010); Malee Factory Company was taken over by Abico Holding PCL. and changed its name to Malee Sampran PCL. ; Siam Food PCL. sold shares and merged with Thai Beverage PCL. (SET.,2010) ; Viriya Food Processing Company (Affiliated company of Thonburi Leasing Company) stopped its production in 2009 and sold its assets to RKI ; In 2010 Malee Sampran PCL. has debt rescheduled and separated the sweet corn factory in Nakonpathom province as a established of Agri Sol Company (SET,2011).

1.4 Switching costs to buyers – effectiveness score: 0.58, possibility score: 3.83,weighted score is 2.24.Switching costs to buyers is low because products from different buyers are not different in terms of characteristics and quality. Buyers from traders to end users have no difficulty if having to switch to other sellers. Therefore new manufacturer who produce identical products with the same quality do not need much investment fund for marketing plan to attract customers. Manufacturer can reduce the price at the beginning. However, in the long run each manufacturer needs to manage the cost, improve the quality, and change packages to differentiate themselves.

1.5 Access to distribution channels – effectiveness score: 0.83, possibility score: 4.75,weighted score is 3.96. The distribution channel of sweet corn business is mostly via traders or modern trade (Kotler, 2000). New manufacturers can enter the market by offering a better price. The second decision making factor of buyers is quality assurance and the ability the meet the quantity and dateline desired, especially during the competitive period of time. If the existing manufacturers have those qualities then it is difficult for the new manufacturers to obtain the market shares, particularly in the premium market. This is possibly easier if the new manufacturers have personal connections or share the same nationality with the imported country. For example, a factory with a Muslim executive may be accepted within the Middle Eastern traders.

1.6 Cost disadvantages – effectiveness score: 0.75, possibility score: 4.83, weighted score is 3.63. Some new manufacturers have limitation in operation capitals e.g. higher funds for purchasing raw sweet corn, time, and funds for packaging. Loans from a monetary establishment for new manufacturers have higher interest rates. Financially troubled new manufacturers usually apply for packing credit by using letters of credit, LC.orders/contracts of sale to guarantee the loan amount with a high interest for manufacturers to support fluidity. Some new manufacturers purchase new and expensive machineries from overseas, but yet are unskillful in operating the machines. This positively benefits the existing manufacturers.

1.7 Government policies – effectiveness score:0.42, possibility score: 3.75,weighted score is 1.56. The sweet corn industry is open to all new manufacturers. They receive the same benefits. Policies for the industry include: (1) Investment policy – Office of the Board of Investment omits taxes for imported agricultural machineries and 8 year-corporation income taxes (2)Governmental agricultural policy – Department of Agricultural Extension's dry season vegetation policy; source of production certificate; safety agricultural product support program; contract farming production; and smart farmer policy (3) One Tambon One Product (4) Village and Community fund encourages sweet corn growers to use the fund to procure production factors (5)Nation village farming policy to take advantage in location and logistic (6)Taxes against European Commission's dumping – canned sweet corned produced in Thailand must pay anti-dumping duty. This policy negatively affects the industry with each firm being affected at a different level. The one being mostly affected pays at a 13.20 percent rate. Thai manufacturer appealed for a price undertaking (EU, 2008) causing sweet corn factories to reduce production capacity. This further affected the competitive ability of Thai industry by having to compete with higher tax rates. The demand and the price of raw corn decreased. This is a barrier to entry for the new manufacturers. However this is pro to the existing manufacturers but it also negatively affects them in a long term. Nevertheless, government policy does not support the industry in terms of approach strategy compared to rice, sugar cane, and cassava. This is the reason for the small size of the industry.

2 Rivalry among existing firms – is a threat to existing manufacturers as the market shares will decrease. Also war price will lead to lower profits. Factors indicating the competitive magnitudes include:

2.1 Number of competitor - effectiveness score: 0.92, possibility score: 4.75, weighted score is 4.35. There are 29 manufacturers in the sweet corn industry, divided by production ability into three groups; six manufacturer capacity >20,000 tons/year, 15 manufacturer capacity > 10,000 – 20,000 tons/year, and six manufacturer capacity < 10,000 tons/year. Although there are not many manufacturers, Thailand is ranked third in the world's sweet corn exporting countries, with 19 percent of the world's exports. The important competitors are the US and E.U. nations, who use policies which disadvantage products from Thailand. The three Thai manufacturer groups have an apparent positioning as the premium manufacturer having strongest competition, especially for the whole corn kernel in vacuum pack (8.25 and 12 oz.). Most manufacturers share this market and usually compete fiercely in central and western Thailand. Manufacture tends to increase while the number of grower remains the same. The number of grower in some parts declines where other industrial crops such as cassava and rubber trees invade.

2.2 Relative size of competitor – effectiveness score: 0.50, possibility score: 2.83, weighted score is1.42.There is an attempt for an industry cluster for sweet corn manufacturers. There is a use of alliance strategy in the large, medium, and small manufacturer as co-packer. This is done because large manufacturers have large orders with limited amounts of raw corn. The medium manufacturers facing liquidity issues take an order from the larger ones with the latter ones responsible for packaging cost. Small manufacturer protect them by avoiding the production of the same products as others e.g. 15 and 75 oz. sizes. There are only RKI and Siam Del monte

(Thailand) Company share in investment of 3.75 percents. RKI has 20 percents of sweet corn seed stock in Thailand. The connection between manufacturers is considerably low.

2.3 Industry growth rate - effectiveness score: 0.75, possibility score: 4.42, weighted score is 3.31. The decrease of exportation in the sweet corn industry is caused by the lack of products and the E.U.'s dumping policy. 2013 is possibly the last year E.U. will employ such policy and Thailand will have an opportunity for market expansion. Thailand is hoping to increase exportation into Japan as Japan regains their strength after the Tsunami, earthquakes and nuclear plant threat. However the European fiscal crisis inevitably affects exportation.

2.4 Fixed costs Vs variable cost - effectiveness score: 0.92, possibility score: 4.50 weighted score is 4.13.The value of machineries, location and area is the fixed cost of the manufacturer. Manufacturers can also be divided into three groups: six manufacturer < 100 million baht assets; 14 manufacturers with 3.33 – 6.66 million USD assets; and seven manufacturers> 6.67 million USD assets. Manufacturers in the latter group need to maintain high production to reach the best value. However it is highly risky if the demand of products decreases which will cause an oversupply (Peter, 2011). This will further cause a price war.

2.5 Product differentiation - effectiveness score: 0.50, possibility score: 3.83, weighted score is1.92. The similarity of products in this industry is the reason for competitiveness. There are only two companies who attempt to differentiate their products concentrating on packaging – Siam Del monte Company (Tetra recart – Integral paper packages), and Siam Food PCL.(Retort pouch). Nonetheless, the two types of packaging are yet to receive different feedbacks from consumers. Sweet corn industry in Thailand is mostly made to order with no own labels. Also consumers are traders with high brand loyalty (Dong-Sung Cho WujinChu ,1994 ; Ling yee Li, 2010).

2.6 Capacity augmented in large increments - effectiveness score: 0.92, possibility score: 4.75, weighted score is 4.35.As a highly competitive industry, everyone attempts to reach their full potential by developing the production Manufacturers. This results in more products with the same amount of buyers causing a price war. As a result, new manufacturers with less available funds leave the industry then the price will again be increased. The long term result is Thailand being reported with anti dumping duty.

2.7 Buyer switching costs – effectiveness score: 0.67 , possibility score: 3.67, weighted score is2.44. The buyer switching costs score is in the middle as most manufacturers are Original Equipment Manufacturers (OEM). Manufacturers produce for brand owners under customers' conditions. Customers have choices of products, as there are many manufacturers available who produce the exact same products. The differences between manufacturers included price, quantity, quality, and other benefits.

2.8 Density of competitors – effectiveness score: 0.33, possibility score: 3.08, weighted score is1.03. To be the world's large sweet corn exporter, competitive strategies and success factors depend on financial stability, the quantity of raw corn, cost management, and the quality of products. Technology is merely a secondary factor in assuring customers' confidence. Thai corn is inferior compared to that from the US and Europe in terms of texture. Thai corn is stickier with thicker skin.

2.9 Exit barriers – effectiveness score: 0.83, possibility score: 3.67, weighted score is3.89. Sweet corn manufacturers have debts and are obliged to pay more than 10 million baht of interest per year. Most factories have ratio of debt share of 2:1. It is not worthwhile to withdraw from the industry. Instead of withdrawing, large manufacturers hence merge with one another. For example, Agripure Holdings PCL.bought RKI (SET.,2010) and Pantheon Company was bought by Thai Beverage PCL. (SET,2011)

2.10 Strategic stakes – effectiveness score:0.75,possibility score: 4.33, weighted score is 3.25 .Although by increasing production with an advanced technology and a better resource management to best respond to the market, but the result is still an unimpressive turnover for manufacturers. However there is a sign of interest in this business. For instance, Siam Food PCL. has the raw corn for Thai Beverage PCL. In turn, it is a diversification (PrachachatTurakij News, 2010).MaleeSampran PCL.had debt restructuring and business restructuring and allowed to reenter into business on June 2011 (SET.,2011). By following the new business plan, MaleeSampran PCLhad adopted a new approach of becoming a central group in the food and beverage industry by using the backward integration strategy. It expanded the business by buying Malee's juice business, having Abico Dairy

Farm Company producing milk and juice; and supporting sales by Central Food Retails Company and Big C Super Center PCL.

3 Threat of substitute product –Traders are able to make buying-selling contracts in advanced by comparing they end or selection and approval vendor list in terms of the production competence, price, quality, and delivery ability. Most traders have an on-site audit before making a contract. Sweet corn's substitutes are:

3.1 Relative price of substitute – effectiveness score:0.50,possibility score: 4.25, weighted score is2.13. Substitute products of sweet corn can be divided into two categories; (1) products physically similar to corn such as canned beans, frozen beans, and other canned grains; and (2) products having similar nutrition such as bread, fried potatoes, mashed potatoes, and high fibered food – fruits and vegetables. However, these products cost more than sweet corn.

3.2 Relative quality of substitute – effectiveness score: 0.42, possibility score: 3.25, weighted score is 1. 35.A better quality is the reason for substitutes. The trend of consumption now is healthy food – low sugar, low sodium and high in vitamins as well as the appearance, color, scent, taste, and texture. For example, canned sweet corn in water A-star (USDA,2001; Campden,2008) is the finest quality corn. Not many manufacturers produce this product. Because it is not very popular amongst the consumers, the manufacturers employ the switching cost to buyers instead of quality improvement.

4 Determinant of buyer power – Buyers pressure the manufacturers to reduce the price and improve the quality of the products. The buyers have power over the manufacturers by:

4.1 Number of buyers relative to sales – effectiveness score: 0.75, possibility score: 4.17, weighted score is3.13. Traders have a negotiation power as they use pre-sale. Manufacturers need Forward-sale for production plans. Factories have production management without having to change the production line to accommodate the change of products. This results in the consistency of products. It is also easier to manage than selling to many smaller traders. Manufacturers attempt to develop the quality and services to impress and attract buyers which will eventually turn into clients.

4.2 Product differentiation – effectiveness score: 0.92, possibility score: 4.50, weighted score is4.13. Sweet corn products have no distinct differences. The difference lies in product specification in packaging, weight, dressing recipe, and production grading. The colors of corn affected by the use of continuous retort machine can be different from the products of other types of machinery. The resistance level between manufacturers is low because the buying power belongs to the buyers. The crucial point is the price offered by the buyers. Manufacturers who manage to keep the costs lower than others will be able to successfully make the sale without being resisted by other manufacturers.

4.3 Switching Costs to use other product – effectiveness score: 0.75, possibility score: 4.75, weighted score is3.56.The selling system starts when a manufacturer has products (or has an ability to produce). They will then negotiate the price and make a buying/selling contract. The risks of shifting to those who offer a lower price are the delay in delivery, poor quality, and being sued by customers which can cost more money. For example, sweet corn from China and Vietnam are usually complained of by the consumers. The consumers then come back and buy products from Thailand.

4.4 Buyers' profit margins – effectiveness score: 0.67, possibility score: 4.33, weighted score is2.89. In this case, buyers attempt to lower the cost and pressure the manufacturers by negotiating terms. The buying/selling price is then accepted by both ends. Manufacturers usually earn 15 – 20 % profit which is similar to what the buyers sell to their customers. Traders receive three percent of FOB. International and Domestic markets do not set the ceiling for price by governments. In contrast, Thailand is affected by the dumping of E.U. because the price of Thai sweet corn is considerably lower than the European sweet corn. Therefore the attempt to lower the orders does not greatly affect Thai manufacturers. Thailand can still compete in the European market.

4.5 Buyers' use of multiple sources: effectiveness score –0.83, possibility score: 4.67, weighted score is 3.89.Sweet corn cultivates in both warm and humid climates. Therefore sweet corn products are all similar.

Buyers can buy from any seller. Hence the competitive force is rather high, especially against China. However, Thailand still has better production management and quality assurance. European manufacturers in Hungary often face weather change and cost of production.

4.6 Buyer's threat of backward integration –effectiveness score: 0.42, possibility score: 2.08, weighted score is0.87. There is an attempt of some buyers turning into manufacturers. For example, Siam Del Monte (Thailand) Company, working under Sam RoiYod Company, is a affiliated company of of Del Monte Company of Japan which has many subsidiarys in other countries in Asia. Also Siam Food PCL.of Thai Berverage PCL. who owns the majority of shares in BerliJucker PCL. who is Thailand's major distributor of retail consumer goods. Therefore Thai Beverage PCL. has businesses in the production/agriculture field all the way to the other end.

4.7 Sellers' threat of forward integration: effectiveness score –0.42, possibility score: 1.67, weighted score is0.69.Brokers and raw corn sellers are experts in agriculture. It is not likely they will turn into buyers. The competitive level is hence, low.

4.8 Importance of product to the buyer – effectiveness score: 0.58, possibility score: 3.83, weighted score is 2.09. Traders and Modern trades have sweet corn as Stock Keeping Unit(SKU). This clientele have choices of manufacturers to buy the sweet corn. Therefore the importance level of products is low.

4.9 Buyer's volume –effectiveness score: 0.67, possibility score: 4.58, weighted score is 3.06.Sweet corn industry is a perfect market but not enough buyers. Most buyers have high buying power. The crucial point is the negotiation between the seller and buyers which can be analyzed in two aspects (1) Buyers have more negotiation power than sellers. Modern trades and traders have better management and fluidity. They also have good inventory management. They have an effective order plan by ordering a large amount of cheaper goods at once for a better negotiating power and special deals. (2) The negotiation puts the pressure on buyers because buyers have good knowledge of the products. However there are also some old manufacturers who have withdrawn from the industry. Hence the buyers cannot use this point to pressure the manufacturers because there are also other factors such as quality and quantity of fresh sweet corn material.

5. Determinant of supplier power – In case of the lack of raw corn, raw corn manufacturers can either increase the price or negotiate for lower quality of the supplied corn which decreases manufacturers' profits. One of the main components of sweet corn industry is can packages and fresh sweet corn raw material (30 and 35% of costs of canned sweet corn). Relevant parties of sweet corn suppliers are brokers and growers. The opportunity for negotiation is in winter time when the rain causes less produces. Growers tend to turn to rice growing instead. The manufacturers pay more money for fresh sweet corn. This aspect indicates the manufacturers' profit making ability. The analyses of power of negotiation amongst sweet corn suppliers are as follow:

5.1 Supplier concentration – effectiveness score: 0.75, possibility score: 4.67, weighted score is3.50. Having few suppliers and many buyers means that suppliers have power over the buyers in terms of price, quality, and other buying/selling terms. Large factories with more than 20,000 ton/year production need 500 – 1,000 growers (1,500 – 4,000 hectares of land: 12.5 tons of fresh sweet corn/hectares : 0.8 hectares: a grower) to decrease the distribution cost. The distance between growing area and factory should not be farther than 50 kilometers. Western Thailand has growing land of 31%, Northern part 28%, North East of Thailand 25.3%, Southern Thailand 8.4%, Central Thailand 5.7%, and Eastern Thailand 1.6%. The price of sweet corn ranges between 144-160 USD. a ton (4.30 – 4.80 Thai baht a kilogram).

5.2 Availability of substitute input – effectiveness score: 1.00, possibility score: 4.75, weighted score is4.75. There are some restrictions in substitute products. There are not many varieties of sweet corn in Thailand. There are ATS-2, ATS-5, ATS-8, Hybrix-3, Hybrix-8, Hybrix-10, Hybrix-49, Hybrix-51, Sugar- 73, Sugar-74, Sugar-75, Intri-1, and Intri-2. Different part of Thailand contributes to the differences in colour, taste and consistency. The substitutes can only be made under buyers' terms. The availability of substitute inputs contributes to the high level of competitive force and effect.

5.3 Importance of suppliers' input to buyer – effectiveness score: 0.92, possibility score: 4.67, weighted score is4.28. The quantity, quality, and price of fresh sweet corn are important variables for the business advantage.

Fixed cost and production per unit; direct variation between sale and raw supply procuring ability; buying price and buying strategy are all important to the production. Manufacturers consider and select suppliers by reflecting on the quantity of crop yield per hectares, cost per hectares, and distribution ability. Growers seldom have negotiation power against the manufacturers. There is a meeting of growers and an announcement of pricing and buying policy every four months. The decision of supplying depends on the growers. The usual negotiation between growers and factories include growing space. However, when growers turn to growing substitute crops such as cassava, the growers have more negotiation power than the factories in both quantity and pricing matters.

5.4 Suppliers' product differentiation – effectiveness score: 0.42, possibility score: 2.50, weighted score is1.04. The more different the products are, the more negotiation power of suppliers is. The differences in sweet corn are (1) varieties – customers choose the variety of sweet corn to grow. (2) size of fresh sweet corn ear – average 3 ear with husk/kilogram ; length of sweet corn ear without husk average 12to18 centimeters ; ear diameter-no more than 3 centimeter ; no more than 14 layers of husk (3) quality appearances – consistent colour (4) quality standard – poorly developed ear - no more than 3 percent; a half of ear - no more than 5 percent; a third of ear - no more than 5 percent ; incomplete development of husk - no more than 5 percent; damaged by pests - no more than 3 percent; major young ear - no more than 2 percent; major dried husk - no more than 5 percent; major spoilage husk - no more than 5 percent; dried kernel- no more than 2 percent; poorly filled kernel - no more than 3 percent; interference variety and uniform colour - no more than 2 percent (TAS, 2011). Growers and brokers can follow the set quality of fresh sweet corn when selling crops to the factories.

5.5 Importance of industry to supplier – effectiveness score: 0.92, possibility score: 4.75, weighted score is 4.35. Fresh sweet corn directly affects the production, quality and the acceptance of buyers. Buyers must approve before the change of variety of corn can be made. Also seeds of sweet corn must be analyzed and developed in a laboratory. Buyers then consider appearance, color, scent, taste, texture, and over all of the products before making such changes.

5.6 Buyers' switching cost to other input – effectiveness score: 0.67, possibility score: 3.17, weighted score is2.11. Buyers face high cost and need switching costs. This does not have much pressure on growers and brokers because of the contract farming which reassure buyers, sellers, growers and brokers in terms of price and the quantity of fresh sweet corn. However when there is a lot of corn, manufacturers might break the contract and turn to cheaper sources. Vice versa, when corn is scarce, manufacturers need to pay more to maintain a good relationship with growers.

5.7 Suppliers' threat of forward integration – effectiveness score: 0.33, possibility score: 1.92, weighted score is0.64. Growers and brokers do not have a potential of being a manufacturers. For example, Sweet Corn Product Company will supplies sweet corn seed to RKI. When sweet corn seed in market be short to supply, because they are the same company. Therefore suppliers' threat of forward integration level is low.

5.8 Buyers' threat of backward integration - effectiveness score: 0.42, possibility score: 2.58, weighted score is1.08. Del Monte Company was a major canned fruits and vegetables in the US foresaw an opportunity in sweet corn industry and joint business with RKI under the name Siam Del Monte (Thailand)Company. producing sweet corn in Tetra recart packages. Recently Central Group of company entered the food and beverage industry by employing backward integration strategy by buying MaleeSampran PCL. to strengthen Central Food Retail PCL, Big C Supercenter PCL, and Tesco Lotus. However Central Group is not a major customer compared to international retail companies such as Tesco UK and Walmart.

5. Summary and Discussion

By analyzing the environment of Thai sweet corn industry using Porter's Five Forces Model, it was found that barriers which affect the capability of new entries of the industry include inadequate funds, approaches to selling, and cost disadvantages. Factors indicating the level of competitive force in the industry are the numbers of manufacturers, over- production, fixed costs, and withdrawing from the industry. While factors affecting the buyers' negotiation power are the non-difference in products, and low switching cost. Factors affecting the sellers' negotiation power are density of growers, difficulty of obtaining substitutes. The risk of substitute products has low effect on the competitive force in the sweet corn industry. It was also found that the difficulty

in obtaining substitutes, importance of suppliers, fresh sweet corn raw material, number of competitors, and overproduction have significant weighted scores average between 4.28 – 4.75. This is because manufacturers attempt to increase the production capacity to save costs to achieve economies of scale. It causes higher costs of fresh sweet corn raw material. This shows that fresh sweet corn is the most important factor in this industry. Manufacturers then need to consider the direct effect from the competitive force in the industry to develop strategies and internal activities. (Low and Cheng, 2006). However, they need to understand that only some components can be fixed (Glenn A. Metts, 2007).Integrating strategic purchasing for fresh sweet corn raw material procurement (Chen and Paulraj2004;Sathit, 2005)with agricultural extension system and contract farming system helps promoting good relationship and collaboration between manufacturers, growers, and brokers. These applications will provide a sustainable competitive advantage and for sweet corn industrial.

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