

Understanding the Business Model of Sorbitol Manufacture as a Substitution Material of Sugar Cane: A Case Study in Indonesia

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Abstract: *The present research explores the sorbitol manufacturing from the business model point of view. Sorbitol or as known as sugar alcohol is one kind of sweetener which has the one-third fewer calories and half sweetness of sucrose. In industrial world, sorbitol was used for intermediate material and additive substances, but modern society consume sorbitol as a substitution of sugar cane for dietary and reducing diabetes risk. In Indonesia, awareness about healthy lifestyles began to grow, so it is possible to expand sorbitol market as a promising sugar substitute. A business model canvas (BMC) and several marketing models such as segmentation, targeting, positioning (STP), product, price, place, and promotion (4P) are used as the analysis tool. The X company was selected as a case study. The result in this study can be used as the depiction of sorbitol business, especially for entrepreneurs, related companies, and governments. Supporting the development of sorbitol product will help the sustainability of this business and reducing the risk of diabetes.*

Keywords - *Sorbitol, Business Model Canvas, STP, 4P, Healthy Lifestyles*

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I. Introduction

In 1970 until 1980, Global epidemiology data show that female adult mortality (15-60 years old) decrease from 220 to 195 (per 1000 population) and male adult mortality decrease from 280 to 250 (per 1000 population). In 1980 – 2000, both adult male and female have a flat mortality, but it increase in 2000 – 2002 from 195 to 200 for adult female and 250 to 260 (per 1000 population) for adult male (Chan, 2003). From that data, we can conclude that in the last two decades the global community living with unhealthy lifestyle.

Diabetes is a metabolic disorder characterized by the presence of hyperglycemia due to defective insulin secretion, defective insulin action or both (Goldenberg, 2013). Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. Diabetes caused 1.5 million deaths in 2012. Higher-than-optimal blood glucose caused an additional 2.2 million deaths, by increasing the risks of cardiovascular and other diseases (Chan, 2016). Many actions do to reduce diabetes symptoms by lifestyle modification like reduction of at least 7% of initial body weight, reduction of calorie and increased physical activity (Kahn, 2014). (Asif, 2014) One of the preventive ways to reduce the diabetes risk is modern dietary management by avoiding all refined sugars such as glucose, sucrose, and their products (soft drinks, sweets, toffees, etc.) and honey. Sorbitol is a sweetener that was recommended for use by diabetics as a substitution of refined sugar (Brunzell, 1978). It has much excellent work to reveal diabetic metabolism, beside its better adsorption, sweet taste and solubility (Olmsted, 1953).

Sorbitol is white crystalline powder which is very soluble in water (Olmsted, 1953). It is widespread in nature, as it exists widely in the plant kingdom and in many fruits such as plum, peaches, apples, berries, cherries and pears. Its relative sweetness is equal to 60% of the sweetness of sucrose with a third of the caloric, giving the cold mouth feeling because of its ability to absorb the heat of solution compared to other sugars as well as to give it a sense of softness, sweetness and pleasure (Sheet, 2014). In worldwide (Italy, France, China, Japan and USA), manufacturing sorbitol has been used high technology equipment, which is the competitive advantages in the global market. In Indonesia, sorbitol manufacture controlled by two big companies. The deficiency of sorbitol manufacture in Indonesia compared with foreign products are low quality (foreign product is more clear), low endurance (sorbitol powder product in Indonesia more easily to caking) and high price of transportation fee. The purpose of this research is to contribute and understand about sorbitol manufacturing business especially in Indonesia.

In this research, an exploration on sorbitol manufacture business is conducted. Specifically, this research will explore the business model point of view. The X company is selected as a case study due to low cost of sorbitol manufacturer, the only one sorbitol manufacturer which produces sorbitol powder in Indonesia

and has a competitive R&D which still study for various sorbitol product. If the industry grows, the proportion of sorbitol products will increase. Thus, it will bring the benefit to companies and peoples' health.

II. Literature Review

2.1. Sorbitol is a kind of Polyols

Polyol is a polymerization of sugar which contain alcohol chain in its group, the kind of polyols are glycerol, mannitol, xylitol, isomalt and sorbitol (Karaca, 2018). Sorbitol is the polyol with the most widespread use in nutrition, cosmetics, medical and industrial applications. It is used as a lowcalorie sweetener and sugar substitute for diabetics, as a humectant in cosmetic and pharmaceutical products, in paper and tobacco and other applications (Singh, 2018). Sorbitol can be obtained by electrolytic reduction of glucose or by hydrogenation of invert sugars, monosaccharides or sucrose (Manaenkov, 2018).

2.2. Business Model Canvas

Business model canvas approach is the implementation of a business model concept that is "simple, relevant, and intuitively understandable, while not oversimplifying the complexities of how enterprises function (Osterwalder and Pigneur, 2010). The purpose of this model is that everybody has a same perception and understanding regarding business model (Urban, 2018).

The Business Model Canvas approach is based on nine building blocks. According to Osterwalder and Pigneur (2010), the customer is the most important element of any business model. The customer is represented by the building blocks customers, customer relationship, and channels. The value proposition represents a selected bundle of products and services, which serve customer needs. They are the reason why customers are interested in a firms' portfolio. The revenue streams represent the revenue generated from the customers and are, therefore, an important indicator for a companies' success. The key resources constitute the basis for the value creation. In order to create value for the customer, a company needs to have primary processes that are represented by the building block key activities. An important cornerstone of business models is the presence of key partnerships. The creation of alliances is essential for companies to reduce risk, acquire resources, or enhance their business models. The cost structure reflects all resulting costs that are generated through the other building blocks whereas the revenue considers the overall net sales (Osterwalder and Pigneur, 2010).

2.3 Segmenting, Positioning, Targetting (STP) and Product, Price, Place, Promotion (4P)

Segmentation is how to differentiate customers on the basis of demographic variables (such as age, gender, education, and income), geographic variables (such as nation, state, region, and neighborhood type), psychographic variables (such as attitudes, opinions, interests, and values), and behaviors (such as media habits, purchase frequency, brand loyalty, and channel usage) (Lynn, 2011). Targetting is how to decide which market segmentation will enter (Dibb, 1991). Positioning usually implies a segmentation commitment—an overt decision to ignore large parts of the market and concentrate only on certain segments (Lynn, 2011).

Product is defined as a physical product or service to the consumer for which he is willing to pay. It includes half of the material goods, such as furniture, clothing and grocery items and intangible products, such as services, which users buy (Singh, 2016). Price is one of the most important marketing mix items and many scientists consider the price as one of the most important elements of the market, which increases not only profits, but also market share (Isoraite, 2016). Another very important element of marketing is a place that is also called the distribution, which is defined as the process and methods by which products or services reach customers. The promotion of the marketing mix is a tool that helps disseminate information, encourage the purchase and affects the purchase decision process (Isoraite, 2016). Present, many company use BMC, STP and marketing mix (4P) for mapping the business area for the purpose to expand market share and improve profit of their company.

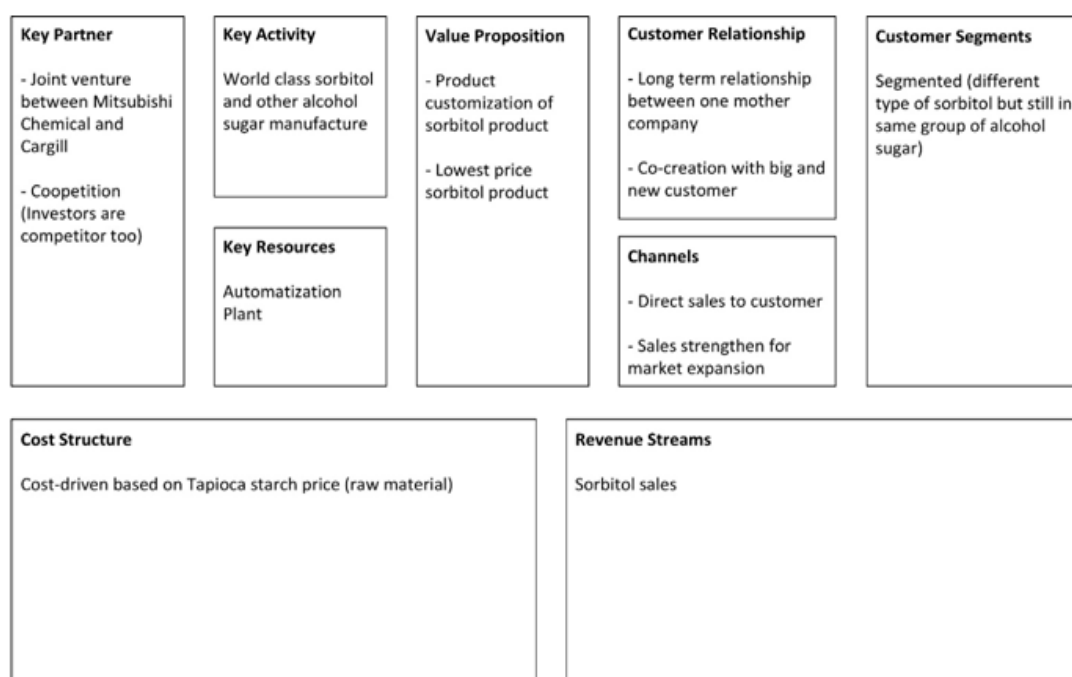
III. Methodology

The present research uses the primary and secondary data for data analysis. The primary data was gathered from the X company internal data. The secondary data were gathered from the public report or related data from reputable source. The data collection was conducted by pointing several keywords such as: "Value Proposition", "Channel", "Customer Relationship", "Customer Segment", "Activities", "Resources", "Partners", and other related keywords. The data collection was conducted in a span of a month, which was from April to May 2018. The analysis of primary and secondary data, later on, will be used as a basis for our study to build the ideal business model for any sorbitol business startups and operators that want to conduct the business in Indonesia.

IV. Analysis Result

Company X is a joint venture between Japanese and American company in sorbitol manufacture. Located in Indonesian, it has a various competitive advantages such as lower raw material cost, lower labor cost and lower supporting material (water, gas and electricity). With capacity 79000 MT sorbitol/year and 520 skilled employees, company X become the big oligopolist company with its competitor (company Y) in Indonesia. Built in 1996, company X has a much experience in sorbitol production both in technology and human resource skill and knowledge. Company X customer is spread out both domestic and worldwide company with business in pharmaceutical and food and beverage company.

In **psycographic segmenting**, company X divide it customer become small customer company, middle customer company and big customer company depend on its quantity demanded. In **Demographic segmenting** side, company X divide it customer based on the usefulness of the sorbitol product (pharmaceutical, food and beverage and additive substances). **Geographic segmenting**, company X divide the customer based on its location (domestic and worldwide). Company X set its segmentation **targetting** in major middle and small food and beverage company with location in Indonesia and East Asia (Korea and Japan). In Indonesian, it can said that company X has a **position** as a market leader in sorbitol powder production



In marketing mixed (4P) company X has a following strategy. **Price**, Company X has a low production cost of sorbitol manufacture, because 70% of production cost is from raw material (tapioca starch). As we know, domestic tapioca starch has a low price than foreign tapioca starch. Company X has a major supplier of tapioca starch in Indonesia which has a competitive price than foreign supplier. Beside, company X has an flexibility of change its raw material (substitution raw material) with corn starch, which is the commodity goods of Indonesia. From this factor, company X can adjust the production price in low level price. **Place**, Plant location of company X is in Indonesia, which is the same location with it competitor (company Y). From this condition, company X has to fight for domestic market share against company Y. In term of price, company X far less than company Y (as we know company Y imply cross subsidies to lower the price of its sorbitol). In global market share, sorbitol price of company X still far less than other global company because of high transportation cost when its company will export sorbitol product overseas. **Product**, Company X has a competitive advantages in sorbitol product than company Y. In Indonesia, only company X which produce sorbitol powder, it make market share of domestic sorbitol powder in Indonesia is controlled by company X. But, in a worldwide sorbitol powder of company X has a less quality than foreign sorbitol powder. **Promotion**, company X has a promotion strategy for develop the market share both domestic and worldwide. Company X has an ability for adjust the formula for specific requirement of customer company (depend on flexibility of plant equipment). From explanation above, for expand domestic market share company X has to improve its sorbitol product quality by improvement of R&D department, has a good forecasting of raw material price to decrease product price, and more aggressive promotion in domestic market. In worldwide, company X has to find a new technology for improve the powder product against global company in a worldwide.

Business model canvas (BMC) of company X is described as above. Company X is the joint venture of Japanese and American Company with scope in petrochemical company. But, beside as a joint venture, both Japanese and American company act as a competitor too. It means that the American Company has a company that manufacture the sorbitol too. Key activity of this company is controlled the domestic and worldwide market share of sorbitol and other alcohol manufacture. The basis of value creation of company X in sorbitol manufacture is automation plant, which all of the sorbitol plant using automation technology. For increasing its value, this company apply costumation of sorbitol product by the flexibility of plant equipment and low price of sorbitol product (because of low raw material). Customer relationship is build and keep by long term relationship which one of the major customer of its company is the same mother company with company X. Other customer relation is built by customer product requirement approach (company X offer to create the specific sorbitol need of customer as a flexibility of plant equipment). Channels of this company is direct sales to customer and sales strengthen for market expansion especially in domestic market. Customer segments of company X is company with requirement of various sorbitol product but still in a group of alcohol sugar. Cost structure of its product is based on raw material of sorbitol (tapioca starch) because 70% of production cost are depend on raw material cost. And the income of its company only from the sorbitol sales.

V. Conclusion

Exploring the use and market share of sorbitol both domestic and worldwide become the focus on this research. Sorbitol which known as a substitution of sugar cane for diabetic, has a potential market share. This research is conducted on how the company X as sorbitol manufacture can survive and expand the market share against its competitor. Study in this paper is conducted by factor analyzed using Segmenting Targetting Positioning (STP), Marketing Mixed (4P) and Business Model Canvas (BMC). By using STP method analyze, company X can divide and consider the customer segmentation, which customer will chose as a major customer and the position of company X against its competitor. Marketing mixed method is used for determined the marketing strategy of company X by asses place factor, promotion factor, product factor and price factor. The last method is BMC, which used for asses all of the internal and external factor as a consideration for setting the company policy. From this study, the author hope to increasing healthy lifestyle by expand the domestic market share. Limitation of this study is studying on Company X compare with domestic competitor (company Y).

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