
Business Feasibility Analysis of Crispy Mushrooms from Oil Palm Bunches

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Abstract-This study elaborate the business feasibility analysis of crispy mushrooms of oil palm bunches from the marketing, technical, and financial aspects. Surveys were conducted on 225 businessmen and 250 consumers in Riau, Indonesia. In terms of marketing, the results of the survey showed that 96 percent of the consumers has an interest in the product, and 92 percent of those was found to like it. The business is also highly feasible to be managed because the main and supporting materials are easily accessible, the workers need no special expertise, and the production process requires relatively simple technology. The financial analysis expects the product to be commercially profitable with a positive NPV value, IRR greater than the rate of return, PI greater than 1 (one), and PP shorter than the length of the investment. Thus, the business is expected to develop and become profitable.

Keywords: Business feasibility analysis; crispy mushrooms; oil palm bunches.

1. Introduction

Palm oil is one of the leading commodities in Riau, with the production of raw palm oil consistently increasing for years. Local Plantation Agency of Riau noted the production of raw palm oil soared from 1,792,481 tons in 2000 to 8,721,148 tons in 2017. This development, by implication, also increases the amount of wasted bunches (*tankos*). One of the efforts that has been done to deal with the waste is to turn it into a medium for growing mushroom. Statistically, every 1600 kg of *tankos* will produce 65-70 kg of fresh straw mushrooms after 40 days. Straw mushroom is rich in vitamins, minerals, and fiber, which are good for digestion (Indrawati et al., 2018).

In Riau, a large amount of oil palm mushrooms are processed into crispy mushrooms and cultivated on a small scale (home industry) for approximately 10 years. The scale of the business is limited as it faces capital restraint to improve the quality of the product and its packaging as well as to expand marketing. Meanwhile, raw materials (mushroom from oil palm) are abundantly available (Caska & Indrawati, 2019), which is very supportive for the development of crispy mushroom business. However, the development of a business requires a substantial investment. Hence, a business feasibility analysis is needed to anticipate future risks that might occur. In addition, the analysis is necessary as an effort to maintain the viability of the business (Berry, 2017; Bolzani & Boari, 2017; Jebrin, 2017; Okon & Morgan, 2018) and to ascertain whether the crispy mushroom business is still feasible to run given it has been in existence for quite a long time.

Analysis on business feasibility is a study conducted in depth to determine whether the business that will be or has been carried out provides greater benefits compared to the costs incurred. What is meant with 'feasible' in this context is that the business is profitable not only for the owner but also for investors, governments and the public. Determining the feasibility of a business requires thorough examination on various aspects including marketing, consumer behaviors, human resources, organization, management, as well as technical, financial, legal, political, economic, social and environmental considerations (Kasmir and Jakfar, 2012; Sunyoto, 2014). This research emphasizes

marketing, technical and financial aspects in analyzing the business feasibility of crispy mushroom of oil palm.

Examination on marketing aspect aims to identify the extent to which the marketing of a product supports business development. The primary aspects investigated in marketing include potential market and actual market. Potential market is a number of consumers interested in a certain offered product or service, while the actual market refers to a true percentage of the consumers having financial capacity to afford the goods or service. Technical aspects relate to how the business is built and how it operates after it starts. Discussion in this aspect encompasses various things from the availability of labor, raw materials and supporting materials to the capacity and process of production and technology. Financial analysis is to calculate the costs incurred and the income received from the business. The criteria of investment in financial aspects include NPV (Net Present Value), IRR (Internal rate of return), Profitability Index (Net Benefit Cost Ratio), and PP (Payback Period).

This study is distinct from previous ones in that it investigates the consumers' acceptance of the product on the marketing aspect more comprehensively. The investigation of consumers' acceptance was conducted to identify their responses to the attributes of a product that comprise color, texture, aroma, taste, and packaging (Costell et al., 2010; Chareonthaikij et al., 2016). Thus, it is the purpose of this study to analyze the feasibility of crispy mushroom business from marketing, technical, and financial viewpoints. The results of the analysis will be the basis for business actors to scale up their business and for financial institutions to pay attention to the existence of crispy mushroom business, especially in accessing capital.

2. Methodology

This research is a survey-based study conducted in some districts in Riau where a lot of crispy mushroom businesses are located and have the potential to be developed: Pelalawan, Kampar, and Siak. The surveys were carried out from March to July 2019, with a sample of 225 businessmen. Primary data were obtained from businessmen by means of questionnaires relating to marketing, technical and financial aspects. Consumers' acceptance test was also done in Pekanbaru city besides the three districts. The researchers selected a total of 250 consumers based on accidental sampling in shops, malls, markets, hotels, offices, housing and rural areas.

Business feasibility analysis consists of marketing, technical and financial aspects. Marketing aspects were analyzed from potential market, actual market, and consumers' acceptance test. The consumers' acceptance test identified the consumers' opinion on color, texture, aroma, taste, and packaging. To comprehend technical aspects, the researcher examined the availability of labor, raw and supporting materials, the capacity and process of production, as well as the technology involved. For financial aspects, the criteria employed include NPV (Net Present Value), IRR (Internal rate of return), Profitability Index (Net Benefit Cost Ratio), and PP (Payback Period).

3. Result and Discussion

As a home industry, crispy mushroom businesses have been in existence for more than 10 years, all of which are owned by housewives with the average age of 48 years. Thus, they are part of the productive age group because the age of productive workforce ranges from 15 years to 64 years old. At this age, they are still physically strong to work and still have opportunities to increase their productivity. With increasing productivity, it is expected that the income to be obtained will also raise.

The business feasibility of crispy mushroom is analyzed from marketing, technical, and financial aspects. Marketing aspects were analyzed from potential market, actual market, and consumers' acceptance test. To uncover the potential market of the business, the researcher looked into who, and how many, are interested in the product. Consumers showing their interest were classified as potential markets. It was found that 96 percent of consumers expressed interest in the crispy mushroom. Such a large percentage of potential market shows that the business received a positive response. The actual market of the product are those who are able to afford it at the offered price, which is presented in Figure 1.

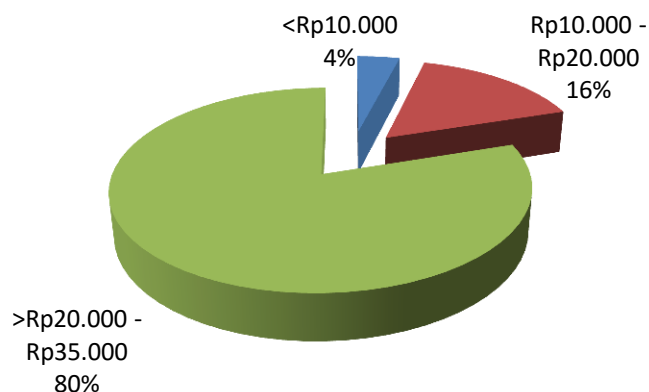


Figure 1. The Consumers' Willingness to Buy Crispy Mushroom

Figure 1 shows about 80% consumers interested in buying the crispy mushroom are willing to afford the product at the price range of Rp20,000 - Rp35,000. Price commonly represents the quality of a product and affects the perception of the consumers (Sunyoto, 2014). The gap of 16 percent (less than 50 percent) between potential market (96%) and actual market (80%) shows that the market in general accepts the presence of crispy mushroom.

In addition to potential market and actual market, how consumers perceive the packaging was also analyzed. Packaging is a container in which products are stored, providing protection to increase durability, and facilitate storage. The purpose of food packaging is to maintain the quality and safety of the food it contains from when it is manufactured to the time it is consumed (Panseri et al., 2018). It is necessary to analyze how products are packaged because good packaging can convey proper information to consumers. It also has the power to explain products and help increase sales (Chareonthaikij et al., 2016). Innovative packaging designs such as brighter colors can attract consumers and induce them to buy a product (Kotler & Keller, 2011; Tijssen et al., 2017). The results of the survey found that 96 percent consumers said the crispy mushroom has an attractive packaging design, and 92 percent stated the packaging is bright and has varied colors as shown in Table 1. The design of packaging is presented in Figure 2.

Table 1. Consumers' Opinions about the Packaging of Crispy Mushroom of Oil Palm

No.	Attributes	Yes		No		Total	
		Total	%	Total	%	Total	%
1.	Attractive	240	96	10	4	250	100
2.	Bright and varied colors	230	92	20	8	250	100

The attributes of the product were also scrutinized from the viewpoint of marketing. The consumers' ratings of attributes can be seen in Table 2. In this regard, the researched paid attention to 6 attributes: taste (Carrillo et al., 2012), aroma /odor (Kihlberg & Risvik, 2007), color (Paakki, 2019), texture

(Jeltema et al., 2016; Nederkoom et al., 2018) appearance (Kihlberg & Risvik, 2007), and overall rating (Carrillo et al., 2012). The study found that about 92 percent of consumers like the crispy mushroom of oil palm. The crispy mushroom of oil palm, therefore, is a prospective business from the marketing aspect.

Table 2. Consumers’ Ratings of the Attributes of Crispy Mushroom

No.	Atributes	Dislike		Quite dislike		Neutral		Quite like		Like		Total	
		Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
1	Taste	0	0,00	6	2,40	10	4,00	21	8,40	213	85,20	250	100
2	Aroma	5	2,00	8	3,20	12	4,80	10	4,00	215	86,00	250	100
3	Color	0	0,00	5	2,00	8	3,20	15	6,00	222	88,80	250	100
4	Texture	3	1,20	11	4,40	11	4,40	13	5,20	212	84,80	250	100
5	Appearance	6	2,40	4	1,60	15	6,00	20	1,18	205	82,00	250	100
6	Overall	0	0,00	3	2,35	5	5,41	12	3,59	230	92,00	250	100

Technical aspects were analyzed by observing the availability of labor, raw materials, supporting materials, production capacity, production processes, and technology. Most of the workers employed in the production process are family members, and the business owners handle all activities from the production process to marketing. When demand of the product increases during times such as school holidays and Eid, the owners employ people around the location of the business to help achieve target. No special skills and education are required for workers to take up the job. Generaly, each of the workers is paid IDR 5,000 per every 1 kg of mushroom produced.



Figure 2. Crispy Mushroom Packaging

The raw material, which is mushrooms grown out of oil palm bunches, is obtained by harvesting from oil-palm plantations or buying on the market for Rp. 15,000 per kg. Additional materials consisting of cooking oil, seasoned flour, plastic packaging, and LPG are purchased at markets or stalls around the production site, while the packaging stickers are printed at the printing press. The owners are able to produce an average of 20 kg/week or 960 kg/year crispy mushroom that is sufficient to meet market

demand (around 19 kg/week or 912 kg/year). The production also involves only simple technology. Thus, the business is technically prospective to be developed.

Table 3. Results of the Feasibility Analysis from Financial Aspects

No.	Analysis Indicators	Results	Note
1	NPV	173.536.622	Feasible
2	IRR	68,71%	Feasible
3	PI	3,25	Feasible
4	PP	1 year 34 days	Feasible

The criteria used to assess the feasibility of the business from the financial aspect are NPV (Net Present Value), IRR (Internal rate of return), Profitability Index (Net Benefit Cost Ratio), PP (Payback Period), and the results of the assessment are presented in Table 3. The data from Table 3 demonstrate the feasibility of the business as all calculations meet the investment criteria, that is, NPV value (173,563,622) more than zero, IRR (68.71%) greater than the expected return (30%), PI value (3.25) greater than 1, and PP (1 year 34 days) shorter than the length of the investment (five years).

4. Conclusion

This study attempts to provide information about the business feasibility of crispy mushroom of oil palm bunches from marketing, technical and financial aspects. In sum, from the marketing aspect, the majority of consumers are interested and like crispy mushroom. Technically, no significant obstacles were found in terms of availability of labor, raw materials, supporting materials, production capacity, production processes, and technology. The assessment of financial aspect also demonstrate similar result – that all calculations met investment criteria. Therefore, the business of crispy mushroom of oil palm bunches is commercially feasible or profitable to be developed in the long term. The results of this study can be the basis for the business to expand its scale and to access capital from financial institutions.

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