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# The analysis financial feasibility of Pempek "a Savoury fishcake delicacy" from Palembang City, South Sumatra, Indonesia

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## Abstract

This study aims to examine two main areas of research: (1) To find out the production process of black pempek (river fish) businesses in Palembang City, and (2) To analyze the financial feasibility of black pempek food businesses in Palembang City based on NPV, IRR, B/C ratio and Net B/C, using a case study method. Data collection was carried out using direct interview techniques with river fish pempek business actors and tracing data on the River Fish Pempek Industry including: investment costs, operational costs, production volume, labor costs, income, product selling prices, and others. Data analysis was carried out descriptively analytically, for the first purpose using the production, depreciation, and income formula approaches and then calculating the BC ratio, NPV, and IRR. Meanwhile, to answer the second purpose using the marketing efficiency formula approach Npi = Hji x Jpi. The results of the study indicate that financially the river fish pempek business is feasible to run where based on long-term calculations for 5 years, the NPV value is Rp. 355,342,418.8, the IRR is 22%, and the Gross B/C is 1.33. The marketing system and channels in the Black Pempek Business can be said to be efficient, because the value obtained has a marketing efficiency of less than 50 percent (Ep <50 percent).

**Keywords:** Black Pempek; Channel and marketing system; Financial feasibility; Marketing Efficency

## 1. Introduction

The development of the food processing industry in Indonesia is strongly supported by natural agricultural resources, both plant and animal, which can create various processed products that can be made and developed from local resources [1]. Currently, in several Asian countries, many food products are taken from local food types and processed traditionally. With the development of these local products, the number and types of food products are increasing (Soleh, 2003). Medium Industry is part of the national industry which is currently growing rapidly (BPS, 2015). The development of medium industry is aimed at increasing community participation and the ability of the weak economic group, strengthening and equalizing employment opportunities and business opportunities, increasing foreign exchange and supporting and expanding dynamic national stability in order to strengthen national resilience [2].

The development of Medium Industry accompanied by implementing policy programs is an attractive potential choice in the people's economic development program [3]. Based on data on the potential and development of the industrial sector of South Sumatra Province, it was recorded that the number of medium food industries in 2012 was 48,997 business units with a workforce of 3,262,023 people for medium businesses [4]. The level of development of the industrial sector is still relatively low, but it must be realized that the development of medium industry is not only important for a path towards equalizing development results, but also as a basic element of the entire industrial structure that with medium investment can produce effectively and can also absorb labor [5].

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The Government Development Program is directed to encourage the creation of a balanced and solid economic structure that includes aspects of economic change and community welfare. One of the development programs is through the empowerment program for micro, small and medium enterprises [6]. The development of MSMEs is highly expected to facilitate the ongoing process of business activities and can absorb a lot of labor and increase added value [7]. The industrial business "Pempek" with sago and fish as the basic ingredients is a type of business that can be classified as a small or medium business because of its dependence on capital in financing its business. The intended micro, small and medium enterprises (MSMEs) aim to increase profits and the value of the company (Abidin, 2008).

Feasibility analysis is a taxation method of a business idea about the possibility of whether or not the business idea is feasible to be implemented [8]. The purpose of conducting a feasibility study is to analyze a particular project, both projects that will be implemented, are being implemented and have been completed for improvement and assessment of the implementation of the project [9]. The criteria for feasibility are whether the business is feasible or not, such as the capital used, the area that will be used in conducting the business, the commodities used and the quality of the commodities used [10]. Pempek is one of the typical foods of the city of Palembang, South Sumatra. The raw materials for pempek are sago and all types of fresh fish that can be processed and made into products. The raw materials for pempek that are generally used in business are mackerel [11].

Black Pempek Business is one form of culinary pempek business by utilizing river fish that are usually not used or not used in making pempek [12]. This Black Pempek is very different from other pempek businesses, because this pempek business has different characteristics from the usual pempek. This Black Pempek also has several variants in choosing the type of fish for processing, namely made from putak fish, snakehead fish, and belida fish. River fish such as snakehead are less popular with people in the city of Palembang. In fact, this river fish has many benefits and nutrients that are very functional for health. The Black Pempek Business in Palembang is one of the MSME Industries that is not widely known by the people of Palembang because Black Pempek uses more online media as its marketing channel. Therefore, it is necessary to conduct a financial feasibility study to find out whether this business can provide benefits or not and how much it costs and to study the marketing channels and systems by Black Pempek business actors. Based on the description of the background above, the researcher is interested in conducting research related to financial feasibility analysis and studying the marketing channels and systems of the Black Pempek business in Palembang city.

## 2. Material and methods

This research was conducted in Palembang City. The location of the research was carefully selected by considering that the place and location are the largest processing centers for black pempek UMKM businesses in Palembang City which happen to be close to the center of river fish fishermen. The method used in this study is a case study method. In this study, the researcher conducted an in-depth study of the case that occurred in the Black Pempek Business in Palembang City. Collecting information on various cost data including: investment costs, operational costs, production data, price data, and others. The researcher also collected information on marketing systems and channels as well as marketing institutions that entrepreneurs use in the Black Pempek Business. To answer the first objective, namely to find out the production process of the black pempek business in Palembang City, a direct interview technique was used with entrepreneurs. Furthermore, before answering the second objective, calculations were made on costs and income and then a financial analysis was carried out which included the calculation of NPV, BC Ratio, IRR and Pay Back Period.

Benefit Cost Ratio (B/C):

$$\mathbf{B/C} = \frac{Bt\frac{1}{(1+i)t}}{Ct\frac{1}{(1+i)}}$$

Net present value (NPV):

$$\mathbf{NPV} = \sum_{t=0}^{n} \frac{Bt-Ct}{(1+i)t}$$

Internal Rate of Return (IRR):

$$\mathbf{IRR} = \mathbf{i} + \frac{NPV}{NPV'-NPV} + (i + i')$$

Pay Back Period (PBP)

$$\mathbf{PBP} = \frac{\mathbf{I}}{\mathbf{Pdt}}$$

## 3. Results and discussion

### 3.1. Process of Making Black Pempek

This research was conducted on the black pempek business actor in Palembang City, South Sumatra Province. The average production capacity is 300,000 units per month with production materials ranging from 100-250 kg of tapioca flour. The process of making black pempek can be explained as follows:

#### *3.1.1. Preparation of Tools and Materials*

Preparation of ingredients is the initial stage that must be done in the processing of Black Pempek. The ingredients needed in the processing of Black Pempek are all types of fresh fish from river fish, namely snakehead fish, putak fish and belido fish, tapioca flour, salt, water and other flavorings. Fish is an additional ingredient in the processing of Black Pempek foods and the purpose of adding fish is to increase nutritional value and to get the distinctive taste of fish. River fish have a source of protein, fat, vitamins and minerals. The ratio of flour, fish will affect the quality of the Pempek produced, so that the Pempek served has a taste and color that is so attractive to consumers.

#### *3.1.2. Making the Dough*

The molding of the Black Pempek food dough is intended to obtain a uniform shape and size. Uniformity of size is important to obtain an even appearance and heat penetration so as to facilitate the frying process and produce Black Pempek with a uniform color. The formation of dough with various types of Pempek such as long pempek, egs pempek, adaan pempek and so on according to consumer desires. The formation of Black Pempek is done by hand.

#### *3.1.3. Steaming Black Pempek*

In the steaming process using a steamer or pan, the size of which is adjusted to the amount of dough to be steamed. The steaming process is intended so that the dough that has been molded into the desired shape is not damaged and steamed for 20 to 30 minutes until the dough rises to the surface so that the Black Pempek is produced according to the desired color.

#### *3.1.4. Cooling Process*

After the steaming process is complete, a cooling process is carried out so that the Black Pempek becomes chewy and ready to be served. Cooling will also facilitate the process in the next stage, namely frying, so that the taste and quality of the Black Pempek are very popular with consumers. The cooling time is approximately one to two hours and is assisted by a gust of wind through the help of a fan in a closed room. During the cooling process, the Pempek should not be exposed to direct sunlight. This will cause the surface of the prospective Pempek to become hard.

#### *3.1.5. Frying and Packaging*

After carrying out the cooling stage, the next is the final stage of processing, which is the frying process. Black Pempek that has finished the frying stage, then the next step will be the packaging process using vacuum plastic for marketing through social media or outside the city of Palembang or in figures who receive Black Pempek to be marketed to consumers or to retailers.

### 3.2. Analysis of Costs and Income of Black Pempek Business

#### *3.2.1. Operating Costs*

Operational costs are costs incurred for each time the production process is carried out. Operational costs can usually be in the form of costs for sales and administration to increase revenue, and are not included in expenses that have been calculated in the cost of goods sold (COGS), or depreciation factors. These operational costs are also divided into two parts, namely fixed costs and variable costs which include all costs for equipment and processing costs up to the stage of marketing costs, both direct marketing and through social media.

**Table 1** Operational Costs of Black Pempek Business

| No | Types of Raw Materials | Cost (Rp/month) |
|---|---|---|
| 1 | Egs | 825..000,00 |
| 2 | Tapioca flou | 27.000.000,00 |
| 3 | Fish | 90.000.000,00 |
| 4 | Flavoring | 100.000,00 |
| 5 | Salt | 87.500,00 |
| 6 | Gas | 495.000,00 |
| 7 | Labour | 16.700.000,00 |
| 8 | Electrical | 560.000,00 |
| 9 | Water | 225.000,00 |
| 10 | Oil | 5.250.000,00 |
| 11 | Vinegar | 23.468.000,00 |
| 12 | Plastic Vacuum | 0.,00 |
| | Total Cost | 164.710.500,00 |

*3.2.2. Materials Cost*

Equipment costs are costs incurred to purchase tools used in the process of making Black Pempek which are not disposable and usually have depreciation costs. The total cost of equipment in the black pempek business can be detailed in the following table:

**Table** 2 Materials Cost per Month

| | Type | Cost (Rp/month) |
|---|---|---|
| 1 | Etalase | 1.625.000,00 |
| 2 | Pan | 42.000,00 |
| 3 | Receptacle | 37.500,00 |
| 4 | Scales | 112.000,00 |
| 5 | Wok | 101.250,00 |
| 6 | Degester | 170.000,00 |
| 7 | Gas | 120.000,00 |
| | Total Cost | 2.207.750,00 |

*3.2.3. Total Cost*

The total cost is the result of adding up the total operational costs and the total equipment costs incurred during a day or once during the production process of processing Black Pempek..

**Table 3** Total Cost

| No | Type | Cost (Rp/month) |
|---|---|---|
| 1 | Operational Cost | 164.710.500,00 |
| 2 | Materials Cost | 2.207.750,00 |

| | | |
|---|---|---|
| | Total Cost | 166.918.250,00 |

The largest operational costs every day or every month such as purchasing fish, tapioca flour from farmers, salt, seasonings, cooking oil and having cheaper equipment costs because the tools used in the Black Pempek production process are not only used once but can be used for a fairly long period of time depending on the use of workers and the maintenance costs of equipment such as containers, pans, gas cylinders and other equipment related to the Black Pempek production process.

*3.2.4. Income and Benefit*

Revenue is the result of multiplying the amount of production by the selling price. The Black Pempek business in this study produces two types of Black Pempek products, namely Black Pempek marketed directly and through social media, namely to retailers and direct consumers. The amount of revenue and income depends on the amount of Black Pempek production produced and seen from the perspective of consumer demand.

**Table 4** Income and Benefit

| No | Type | Total Cost (Rp/month) |
|---|---|---|
| 1 | Income | 350.000.000,00 |
| 2 | Benefit | 177.629.500,00 |

### 3.3. Analysis of Costs and Income of Black Pempek Business

*3.3.1. Investasi Cost*

Investment costs are costs incurred once during the life of a company to obtain economic benefits. They can no longer provide benefits and are usually called depreciation.

**Table 5** Investasi Cost per year

| Year | Tyepe | Cost |
|---|---|---|
| 0 | Rent of land | 180.000.000 |
| | House Production | 120.000.000 |
| Total | | 300.000.000 |

*3.3.2. Operational Cost*

Operational Costs are costs that can change in value as a whole according to the level of business activity in the Black Pempek Industry. The greater the production capacity owned by a business, the greater the operational costs that will be incurred. In calculating the long-term operational costs of the Black Pempek bussiness, it is assumed that the Black Pempek business will increase its production capacity in 2020 to 2024, this is because in that year the Industry will develop its business by increasing the level of demand from consumers.

**Table 6** Operational Cost Per 5 Year

| No | Type | Cost (Rp/5 years) |
|---|---|---|
| 1 | Palstic Vacum | 0 |
| 2 | Tapioka Flour | 1.417.500.000 |
| 3 | Fish | 4.725.000.000 |
| 4 | Seasoning | 5.250.000 |
| 5 | Salt | 4.593.750 |
| 6 | Gas | 25.987.500 |

| | | |
|---|---|---|
| 7 | Labour | 876.750.000 |
| 8 | Electrical | 29.400.000 |
| 9 | Water | 11.812.500 |
| 10 | Oil | 275.625.000 |
| 11 | Vinegar | 1.232.070.000 |
| 12 | Egs | 43.312.500 |
| | Total Cost | 8.647.301.250 |

*3.3.3. Materials Cost*

Equipment costs are costs incurred to purchase tools used in the process of making Black Pempek which are not disposable and are usually found in depreciation costs. The cost of this equipment is used by the small and medium industries of Black Pempek such as the cost of display cases, pans, containers, frying pans, scales, stirrers or spatulas and others. The cost of the equipment used has its own usage limit. For more details, see Table 4.9.

**Table 7** Materials Cost per 5 Year

| **No** | **Type** | **Cost (Rp/5 year)** |
|---|---|---|
| 1 | Etalase | 3.000.000,00 |
| 2 | Wok | 760.000,00 |
| 3 | Pan | 280.000,00 |
| 4 | Receptacle | 500.000,00 |
| 5 | Scale | 360.000,00 |
| 6 | Spatula | 1.920.000,00 |
| 7 | Gas | 840.000,00 |

*3.3.4. Total Cost*

Total costs are the result of adding up the total operational costs and the total equipment costs incurred during a day or once a month in carrying out the production process for processing Black Pempek.

**Table 8** Total Cost per 5 Year

| **No** | **Componen Cost** | **Cost (Rp/5 year)** |
|---|---|---|
| 1 | Operational Cost | 8.647.301.250 |
| 2 | Materials Cost | 7.660.000 |
| Total Cost | | 8.654.961.250 |

*3.3.5. Revenue*

The income obtained by the Black Pempek Industry is the result of multiplying the amount of production by the selling price applicable to each small and medium scale business. This study resulted in two types of marketing, namely directly and through social media and with different prices depending on the fish used in the processing of Black Pempek. The amount of income depends on the amount of river fish production produced. Black Pempek production will usually increase on big days such as holidays and Christmas and New Year celebrations.

**Table 9** Revenue Black Pempek Food Business (per 5 year)

| Year | Type of Marketing | Total Revenue (Rp/5 year) |
|---|---|---|
| 1 | Direct | 3.500.000.000 |
| 2 | Direct | 3.512.500.000 |
| 3 | Direct | 4.230.000.000 |
| 4 | Direct | 5.660.000.000 |
| 5 | Direct | 7.100.000.000 |
| Total | | 24.002.500.000 |

*3.3.6. Benefit*

Benefit is the difference between revenue and total costs. Income or profit will be obtained if the difference between revenue and total costs incurred is positive. Long-term profit is the net income received by the producer during the business period, namely the next five years. In this study, the net profit received by the producer is calculated using the Bank Indonesia savings interest rate of 7 percent.

**Table 10** Benefit Black Pempek Food Business (per 5 year)

| Years | Total Cost (Rp/year) |
|---|---|
| 1 | 1.679.346.550 |
| 2 | 680.017.500 |
| 3 | 331.203.500 |
| 4 | 762.035.500 |
| 5 | 1.220.400.400 |
| Total | 4.673.003.400 |

### 3.4. The Analysis Financial Feasibility of Black Pempek Business

Financial feasibility analysis is part of the feasibility analysis of a business or project. Financial feasibility analysis aims to investigate the comparison between the expenses and income of a busines.

**Table 11** Feasibility Analysis of Black Pempek Business

| Kriteria | Value |
|---|---|
| NPV | 11.763.181.719 |
| PVB | 19.172.180.500 |
| PVC | 7.408.998.781 |
| Gross B/C | 2,20902929 |
| IRR | 28.00% |
| PP | 1 year 2 month 18 days |

## 4. Conclusion

Based on the analysis conducted on black pempek food business in Palembang City, it can be concluded that the black pempek food business activity is a productive economic business that has been running well starting from the processing of raw materials to finished products that are ready to be marketed so that it can maximize the profits of

each business and financially this business is feasible to be developed because the NPV value> 0, Gross B/C> 1, Gross B/C> 1, IRR> applicable interest rate, and PP can be achieved in the first year in the third month.

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