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Domestic Needs Fulfillment Management with Investment Opportunities in Corn Processing into Gomak Noodles in Samosir Regency

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ABSTRACT

The demand for gomak noodles or lidi noodles made from corn, a typical food of Toba and Samosir, has long been popular. In the current era, it is trending again with the number of requests increasing every year. It is very rare for business units to produce it and it is only found in Balige, with a distinctive taste. It is possible that the taste is different because it uses raw materials from the Lake Toba area. If processing or development is carried out in the Toba and Samosir areas, it will have an impact on increasing the income of this region. This study aims to determine the investment opportunities for processing corn into gomak noodles in Samosir Regency for domestic needs fulfillment management. Research using literature studies with reference to various experiments that have been conducted in various different places. With an analytical approach to calculating investment costs, production costs, financial structures, sales estimates, production cost estimates, and cash flow. Fulfillment of financial feasibility is carried out by looking for break even point analysis, net present value, incremental rate of return, net benefit cost ratio, and pay back period, as well as sensitivity analysis. The making or processing of corn into gomak noodles in Samosir Regency can be seen from the negative net present value of Rp-10,923,517, the internal rate of return of 11% indicates that the rate of return is greater than the specified bank interest rate. The payback period is 9 years if the planned assumptions are met, the profitability index is 1.01 and the benefit-cost ratio is below 1, indicating that the benefits obtained are less than the costs. The project is very sensitive to decreased revenue or increased costs. Small changes in both variables can cause the project to experience losses or fail to return capital. The current profit margin is too thin, which causes the business to be unable to withstand fluctuations in raw material prices, operational costs, or decreased market demand. The payback period is too long or more than 9 years, not suitable for small or micro businesses.

Keywords
Gomak Noodles, Investment Opportunities, Net Present Value, Payback Period

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INTRODUCTION

The Lake Toba area with its signature food, "Mie Gomak", is increasingly in demand by visitors and tourists, usually served as a morning meal, called "Breakfast". The delicious and distinctive taste makes the tongue vibrate with the andaliman spices that are rarely found in other places. Demand is increasing for this type, which is actually made from corn; very prospective to be further developed. Moreover, this corn plant is widely cultivated by the surrounding population.

Corn production, as the raw material for making gomak noodles, has a different taste when compared to corn produced from other places. For the sake of the distinctive taste of gomak noodles, and it is important to maintain its uniqueness, and so far it has only been produced in the Balige area in very limited quantities. An important question in order to maintain the taste of gomak noodles, in order to meet consumer satisfaction, it is necessary to develop its production in the Lake Toba area and the surrounding Samosir Island; especially for business actors who want to establish a corn processing production business into gomak noodles. From this question, this research becomes important in order to answer how financially feasible it is if this gomak noodle making business is carried out.

This corn noodle making business also allows to stimulate the economy in the region because in addition to increasing regional income, it can also create jobs from the micro, small and medium business sectors. Investment and business feasibility of establishing corn processing into corn noodles will have an impact on increasing the added value of income and job creation in the region because it will provide a greater multiplier effect, especially for remote areas.

Financial feasibility studies of the business have been relatively widely carried out by academics, in various industrial fields; including financial feasibility in the manufacturing industry and agro-based industry (Firmansyah et al., 2006; Wolf et al., 2005; Wulandari, 2012).

Corn, a local commodity in the Lake Toba area and its surroundings, will be one of the mainstays to support food security and food diversification. This corn commodity has a production with an increasing tendency every year, recorded production data of 15,913 tons, in 2017 and becoming 17,543 tons in 2018 (with an average productivity per year of 5.96 tons and 5.42 tons (Badan Pusat Statistik, 2008).

Corn is one of the strategic commodities in national development, especially agriculture and the Indonesian economy, because it has a dual function; namely as food and feed. Corn as a food ingredient reaches 50 percent

of the total need (Widowati, 2012). The use of corn as a noodle product has the potential and is a business opportunity to increase added value as well as diversify non-wheat and rice food processing. Can reduce dependence on wheat and rice imports. In addition, it is known that the increase in instant noodle consumption in food-insecure households in Indonesia, it turns out that noodle products have become the second main food ingredient after rice in Indonesia.

The results of a study of consumer preferences for non-rice processed products show that consumers really like corn processed products including corn noodles. The corn noodle consumer segment is also very broad, because corn noodles can be consumed by all ages from children to adults. Corn noodles have the advantage of containing carotenoids which can be a source of vitamin A. Carotenoids act as natural yellow dyes, so they do not require the addition of synthetic dyes. In addition, they contain low glycemic and are good for diabetics to consume.

The process technology and equipment technology of corn-based noodle products have been developed by the Center for Development of Appropriate Technology-Indonesian Institute of Sciences (BBPTTG-LIPI), in 2011, starting from laboratory scale to pilot scale. The method of making corn noodles by compacting the dough, forming sheets and strands (sheeting sliting method). The dough ingredients are first steamed using a steamer and then kneaded with a mixer. Before being formed into sheets, the dough is first compacted. The process of making corn noodles requires process modifications because the characteristics of the raw materials for corn noodles are different from wheat noodles. Flour or wheat contains gluten which causes the physical properties of noodles to be chewy and not easily broken. To obtain physical properties that are close to wheat noodles, the corn dough must first be compacted with a dough compactor and then formed into sheets and sliced with noodle strands using a noodle molding machine. The last process stage is filling the noodles with the deep frying method and packaging.

Aspects that must be considered in the technical feasibility of production, including the need for labor, production space, equipment machines, etc. To support the success of technology development, a financial feasibility analysis is also required so that it can be known whether it is profitable or not.

This study aims to determine the investment opportunities for processing corn into gomak noodles in Samosir Regency for domestic needs fulfillment management.

RESEARCH METHOD

This study is a literature study using data on corn processing into corn noodles from various sources. Data collection was carried out from January to December 2024. Data collection uses secondary data which is data that is already available and collected by other parties, not by the researchers concerned. This data is usually obtained from existing sources, such as reports, publications, records, or databases, and is used to support or complement the research being conducted. The location of the establishment of gomak noodles and corn raw materials was deliberately chosen in Samosir Regency for the reason that it is very potential as a place of establishment or processing, considering that there is corn raw material produced by the community and the corn harvest does not have to be taken out of the area to be processed and imported back in the form of noodles. Transportation costs can be saved, and at the same time create greater added value in this area. Annual corn production data is a reference for use as raw material for making gomak noodles. Indeed, routinely available data is difficult to obtain, but in fact it can be seen that corn plants are present every year in this area and experience an increase in area every year.

The analysis materials used in the study of corn-based noodle business development are the same as those used in making corn noodles in general in other places, such as corn flour, salt, guargum, water, and frozen oil or shortening. Machines and equipment include scales, steamers, steamers, gas stoves, mixers, dough compactors, noodle molding machines (sheeting slitting), frying pans, sealers, electricity, etc. The information needed for this study to calculate the feasibility of the business is capital or investment costs, production costs, fixed costs, variable costs, semi-variable costs, and other related data, and refers to noodle making and similar research experiments.

The method used refers to the literature and experiments on the corn-based noodle production process that have been conducted by BBPTTG-LIPI to determine the needs of raw materials, machinery, electricity, water and other factors in the production process. From the production process experiments, information and production data can be obtained in calculating financial feasibility. The information needed includes capital or investment costs, production costs, fixed costs, variable costs, semi-variable costs, and other related data.

The stages in conducting a financial feasibility analysis of a corn-based noodle production business are:

1. Investment Costs
2. Production Costs

3. Financial Structure
4. Sales Estimates
5. Production Cost Estimates
6. Cash Flow
7. Fulfillment of Financial Feasibility Criteria by Finding Break Even Point Analysis, Net Present Value, Incremental Rate of Return, Net Benefit Cost Ratio, and Pay Back Period
8. Sensitivity Analysis

RESULT AND DISCUSSION

Production and Income

Based on the assumptions and technical parameters that have been determined previously, the production capacity of gomak noodles per month with a capacity of 160 packages, with a selling price per package of Rp7,497. The determination of the selling price is calculated from the cost of production of Rp9,746 plus a profit of 30% of the cost of production. From the results of calculating the sales of packaged gomak noodles, the income per month is Rp1,559,360. The discount factor or also known as the marginal average revenue return used is 12%-14%, referring to previous research that set the marginal average revenue return value at 12%-14% (Surahman et al., 2007). The discount factor value can also use the bank loan interest rate of 14% (Wibowo, 2006). Meanwhile, with the calculation using the July 2013 inflation of 8.61%, the marginal average revenue return value obtained is 0.6209%.

Table 1.
Selling Price of Packaged Gomak Noodle Products

No.	Details	Amount (Rp)
1	Cost of Goods Sold	7,497
2	Margin (30%)	2,249
Total		9,746
Selling Price		9,746

Sales Projection

A study conducted by PT. Jagung Sentosa Indonesia in 2008, stated that there is still a market opportunity of 13% of the total market share of noodle products with a consumption value of 29 trillion rupiah and a growth rate of 11% per year. It is estimated that in 2009 the volume of this noodle industry was 472.2 billion rupiah or equivalent to 4,330 tons/year. PT. Jagung Sentosa Indonesia has a target to meet a market share of 10% for noodles and 7% for pasta with corn flour as the basic ingredient by 2020 (Mulyono et al., 2009).

From the results of the study, it is known that the potential market for corn noodles is still wide open, so it is assumed that instant corn noodle products are sold on the market every month as many as 4,800 packages or as much as 4.6 tons/year with a market share of 1% of the total 10% market share that has not been fulfilled by 433 tons/year. The projected sales of corn noodles are Rp14,136,000.00 per month with a selling price of Rp3,100.00 per pack.

Table 2.
Projection of Production and Sales of Instant Corn Noodles

No.	Details	Production Output/Year (Packaging)	Price (Rp)	Value/Month (Rp)
1	Instant Corn Noodles	57,600	9,746	561,369.000
2	Total Gross Revenue/Year			561,369.000

Profit and Loss Projection and Break Event Point

Profit or loss projection is done to determine the level of profitability of the investment activity plan. The calculation of profit or loss is obtained from the difference between income and expenses. From the calculation of profit or loss, the investment plan for the instant corn noodle business produces a net profit of Rp2,463,079.00 per month. The break-even point is a point in the amount of production or sales that must be made so that the costs incurred can be covered again or the value where the profit received by SMEs is zero. From the calculation of the break-even value, the results of the instant corn noodle project or business will break even point if they produce and sell 28,277 packages of instant corn noodles or worth Rp87,658,845.00.

Table 3.
Instant Corn Noodle Business Profit and Loss Projection

No.	Details	Average (Rp)
1	Income	5,559,800
2	Operating Costs (Biaya Tetap, Biaya Variabel, Semi Variabel)	3,747,257
3	Gross Profit	1,812,543
4	Profit Before Tax	1,733,125
5	Depreciation Expense	79,4180
6	Taxable Profit	1,733,125
7	Tax (10%)	173,313

8	Net Profit	1,559,812
9	Profit Margin (%)	28.05%

Cash Flow and Investment Criteria

Cash flow consists of cash inflow and cash outflow. The components of cash inflow consist of income from product sales, while cash outflow consists of investment costs, operational costs, bank credit loan installment payments, and income taxes. To determine the feasibility of an investment plan, NPV, IRR, PBP and B/C ratio calculations are carried out. NPV analysis is carried out to see how the investment value is considering changes in currency values. NPV is the difference between the present value of profits and costs. IRR is basically a method for calculating the interest rate that can equate the present value of all cash inflows with the cash outflows of a project investment. IRR is used to calculate the actual rate of return.

The NPV calculation shows a value of Rp–8,787,327 for a project period of 5 years, and Rp–10,923,517 if calculated only in 3 years. A negative NPV indicates that the present value of all cash inflows is not enough to cover the initial investment value of Rp15,000,000. This indicates that the project is not financially feasible if it only relies on the current cash flow assumption.

The IRR is calculated at 11.3%, which is slightly higher than the MARR of 10% (assuming a minimum rate of return). This indicates that in terms of internal returns, the project is still feasible, but the excess margin is very thin and does not provide a safe space for business risks or uncertainties.

The ratio of benefits to costs obtained is 0.41, which means that every Rp1 investment only produces benefits worth Rp0.41. This value is far below the feasible threshold (B/C≥1), so the project is not recommended to be run under current conditions.

The payback period is estimated to take ±9 years and 2 months, which is very long for a micro or small scale business. The longer the payback period, the higher the business risk due to long-term uncertainty factors.

Table 4.
Corn Noodle Project Investment Criteria

The Year of	Cash Flow (Rp)
0	1,559,812
1	1,490,209
2	1,354,736
3	1,231,538
NPV	-10,923,517
IRR (%)	11.03

MARR (%)	10
B/C Ratio	0.41
PP	9 Years
Decision	Not Worth Running

Sensitivity Analysis

Sensitivity analysis is conducted to assess how much impact changes in key variables have on the financial feasibility of a project. The purpose of this analysis is to understand business risks and identify the extent to which the project remains feasible if certain changes occur, such as increased costs or decreased revenue. In this analysis, the two main variables tested for sensitivity are revenue that is likely to decrease due to decreased selling prices or sales volume. Operating costs that are likely to increase due to increased prices of raw materials, energy, or labor costs.

The simulation results show that the project is very sensitive to decreased revenue. With current revenue of Rp5,559,800, the profit margin generated is very thin. If revenue drops by 10–15%, then:

1. RR Will Drop below MARR (10%)
2. NPV Will Become Increasingly Negative
3. Payback Period Will Become Longer
4. Net Profit Will Approach Zero or Even Negative

This means that a slight decrease in revenue can make this project financially unfeasible. With its current high cost structure, the project does not have enough cost flexibility to withstand material or energy price spikes. The break-even analysis shows that the break-even point is very sensitive to small changes in revenue and costs. This indicates that the profit margin of the project is too thin to be considered safe.

CONCLUSSION

From the financial analysis the results obtained of the negative net present value of Rp-10,923,517, the internal rate of return of 11% indicates that the rate of return is greater than the specified bank interest rate. The payback period is 9 years if the planned assumptions are met, the profitability index is 1.01 and the benefit-cost ratio is below 1, indicating that the benefits obtained are less than the costs. The project is very sensitive to decreased revenue or increased costs. Small changes in both variables can cause the project to experience losses or fail to return capital. The current profit margin is too thin, which causes the business to be unable to withstand fluctuations in raw material prices,

operational costs, or decreased market demand. The payback period is too long or more than 9 years, not suitable for small or micro businesses.

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