

Financial Analysis of Gluten Free Nuggets with the Addition of Chicken feet Bone Starch

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Abstract

The community's need for healthy and gluten-free food encourages the birth of functional food product innovations based on local ingredients. This study aims to analyze the financial feasibility of the gluten-free chicken nugget production business with the addition of bone meal as a natural binding agent as well as a source of calcium. The research was conducted in a quantitative descriptive manner with a business feasibility study approach which included an analysis of initial investment, production costs, cost of production, break-even point (BEP), net profit, cash flow, Net Present Value (NPV), Internal Rate of Return (IRR), R/C ratio, Return on Investment (ROI), and Payback Period. The results of the analysis show that this business generates a net profit of IDR 203,549 per production cycle (40 packs), with BEP achieved at 31 packs. The NPV value of IDR 87,144,368 and IRR of 26.64% show that this business is able to provide a high return on investment. An R/C Ratio of 1.26 and an annual ROI of 111% indicate good business efficiency and profitability. The payback period of 0.95 years strengthens the feasibility of the business in terms of liquidity and risk. Thus, the gluten-free chicken nugget processing business based on bone meal is declared feasible and has the potential to develop as a functional food solution that supports the principle of zero waste.

INTRODUCTION

Along with increasing public awareness of the importance of a healthy lifestyle, the trend of consuming more natural, functional, and additive-free food continues to increase. (Aisyah, 2023) This change in consumption patterns is not only driven by the desire to live healthier, but also by the increasing diagnosis of certain health conditions, which require a special diet, such as gluten intolerance and celiac disease. Both conditions cause sufferers to be really selective in choosing the food they consume so as not to cause disturbances to the digestive system and body health. One of the main concerns of consumers today is to avoid gluten consumption, especially for those who have gluten intolerance or have celiac disease (Rimadiaz et al., 2024). This condition encourages the creation of various alternative food products that remain delicious but safer to consume for the group while meeting the increasingly widespread market demand.

Modern consumers are not only looking for delicious food, but also demanding the safety, naturalness, and health benefits of the products they consume. In this context, food producers are required to innovate in order to create products that are in accordance with market

trends, namely healthy, functional, and environmentally friendly food. One of the food products that is very popular in various circles, from children to adults, is chicken nuggets. Rokhayati (Rokhayati, 2023) explained that nuggets have the main advantages in the form of practicality, a taste that many people like, and wide availability in the market. However, nuggets generally use wheat flour as a binding agent and coating before frying. This is an obstacle for consumers with special dietary needs, especially those who follow a gluten-free diet or have an intolerance to the protein.

On the other hand, there is a potential for local raw materials that have not been utilized optimally, namely chicken tail bone waste, especially from the dairy industry, which is still not optimally utilized (Fadillah et al., 2013). This crock has the potential to become an environmental problem that can cause unpleasant odors, become a source of pathogens, and pollute groundwater if not treated properly, so innovative solutions are needed to turn it into a resource of economic value.

Through the innovations carried out, ceker bone waste is processed into calcium-rich bone meal (Amalia et al., 2017). This processing process not only solves the waste problem, but also creates new functional raw materials. Chicken bone meal has hydrocolloid properties that allow it to act as a natural binding agent in the formulation of gluten-free chicken nuggets. By replacing the role of wheat flour, these nugget products become safe for consumption by celiac sufferers or individuals on a gluten-free diet. This product innovation not only meets consumer needs for healthy and safe food, but also supports the principle of zero waste in the food industry and contributes to the development of a sustainable food industry based on the use of local ingredients.

Therefore, to realize this innovation into a real and impactful business, it is necessary to conduct a thorough financial analysis of the gluten-free chicken nugget processing business based on ceker bone meal. This analysis is the backbone of business planning that will test the economic viability of the idea, including the calculation of initial investment, production cost, cost of production, projected revenue, break-even point, as well as estimated profit and business feasibility in the short and long term.

Financial analysis is a systematic study related to the financing of a business. This analysis allows entrepreneurs to measure whether the business is profitable and feasible to run (Fitriani et al., 2018). With this analysis, the feasibility of a business can be assessed and evaluated for its level of efficiency, so that it can be known whether the business generates profits as well as knowing the percentage of profit obtained, as well as determining the break-even point of the business being run (Dharma et al., 2022). The results of this comprehensive financial analysis become a critical foundation in the business decision-making process.

This analysis report is used as the main consideration for management or investors to decide whether to accept and continue investing in a business idea, or reject it because it is considered not profitable enough or too risky financially (Agustina, 2018). The results of this analysis not only show whether the venture is worth running, but also identify which aspects still need to be improved to improve efficiency and profitability. Thus, business actors can minimize the risk of failure and ensure that these innovations with social and environmental value can also be economically sustainable. Some of the analyses that are generally used to assess the feasibility or potential profits of a business include Break-Even Point (BEP) Analysis as mentioned, Cash Flow Analysis, Return on Investment (ROI) and Payback Period (PP) Calculation, as well as more complex methods such as Net Present Value (NPV) and Internal Rate of Return (IRR) for long-term feasibility assessment. The application of these various analytical tools will provide a holistic and in-depth picture of the financial prospects of the gluten-free chicken nugget business based on bone meal ceker, so as to minimize the risk of

failure and ensure that this innovation with social and environmental value can also survive and develop commercially.

RESEARCH METHODOLOGY

1. Research Approaches and Objectives

This study uses a feasibility study approach with the main objective of assessing the economic viability of a new business idea, both in the short and long term. The focus of the research is to analyze the potential profits and determine the financial feasibility of the proposed venture. The final results of this research will be the basis for critical and objective considerations in strategic decision-making—whether the business idea is worth going or needs to be rejected (no-go).

2. Design Analysis and Data Sources

The core of this research lies in quantitative financial analysis. This study is designed as a case study that collects and processes financial prognosis (forecasting) data. The data used is a combination of primary and secondary data. Primary data is obtained through direct observation of the prototype production process. Meanwhile, secondary data includes literature studies, industry reports, and market surveys to obtain information such as raw material prices, labor costs, consumer demand trends, and the selling prices of similar products in the market.

3. Financial Variables and Calculation Methods

This research focuses on the calculation and evaluation of critical financial figures. The variables calculated and analyzed include:

1. **Initial investment:** Calculates the total capital required before operations begin, including fixed assets (such as machinery, equipment, and renovations) as well as working capital.
2. **Production Costs:** Projecting variable costs (such as raw materials and direct labor) and fixed costs (such as salaries, rent, and utilities) incurred during operations.
3. **Net Profit:** Calculated from projected sales revenue minus total production costs and taxes.
4. **Capital Budgeting:** Several methods are used to evaluate the profitability of the business in the long term, namely:

Net Present Value (NPV): To measure the net value of a business by discounting all future cash flows to present value.

Internal Rate of Return (IRR): To look for a discount rate that makes the NPV equal to zero, which indicates the expected rate of return.

Payback Period (PP): To calculate the period of return on initial investment.

Profitability Ratio: Other ratios calculated include **Return on Investment (ROI)** to measure investment efficiency and **Revenue to Cost Ratio (R/C Ratio)** to see the comparison between income and expenses incurred.

4. Eligibility Criteria

A business idea is declared financially viable if it meets the following criteria: NPV is positive, the IRR is higher than the interest rate on the bank loan or the investor's desired rate of return, the Payback Period is shorter than the set period, and the ROI and R/C Ratio are greater than 1. The results of this analysis not only produce descriptive figures but also provide clear recommendations regarding the feasibility of implementing the business idea.

RESULTS AND DISCUSSION

Profit Analysis

Profit analysis serves as the most crucial financial health check for a business. In essence, this analysis is used to calculate the net profit or profit obtained from a business after all operational and non-operational costs are deducted from the total revenue (Lyanda, 2021). This calculation provides a real picture of the core capabilities of a business in making money from its operating activities.

Source of Funds

The initial funding used in the implementation of this business comes entirely from personal funds. All capital needs including initial investment, operational costs, and other spending needs are financed without the involvement of third parties, either in the form of loans from financial institutions or support from external investors. The use of personal funds as an initial source of financing, where all financial responsibility lies entirely with the business owner, but on the other hand provides flexibility in decision-making without having to consider the interests of outside parties.

Total Cost

Total cost or total cost is the total cost incurred in the production process of a good or service, which includes all components of expenditure, both fixed and variable during a certain period. In general, total cost is defined as the sum of the total fixed cost (TFC) and total variable cost (TVC), or mathematically expressed by the formula $TC = TFC + TVC$. Analysis of total costs is important to understand the cost structure of a business and determine production efficiency. By knowing the amount of the total cost, business actors can calculate the cost of production (COG), determine competitive selling prices, and estimate the profits obtained. In the context of business feasibility analysis, total cost is the main indicator in determining the break-even point (BEP), which is the point where the business income is equal to the total cost incurred so that there are no profits or losses.

Fixed costs

Fixed costs are costs whose value does not change even though the volume of production increases or decreases, such as the cost of renting a place, depreciation of equipment, and fixed labor wages (Assegaf, 2019).

Table 1 Fixed Cost

Component	Unit	Value of Invention	Residual Value	Economical lifespan (years)	Depreciation value/ Day
Service					
1. NKV				5	
2. Halal Certificate		350.000		3	-
3. NIB					
4. Environmental Permits					
5. IMB					
6. BPOM		1.000.000		5	
Building					
Rent a Building		60.000.000		5	32876
Equipment					
1. Chopper	1	250.000	50.000	5	110

2.	Pressure Cooker	2	300.000	60.000	5	131
3.	knife	4	100.000	20.000	3	73
4.	Stainless Basin	4	250.000	50.000	5	110
5.	Baking Dish	4	200.000	40.000	4	110
6.	Stove	1	400.000	80.000	5	175
7.	LPG	2	125.000	25.000	3	46
8.	Oven	1	890.000	17.800	5	390
9.	Blender	1	350.000	70.000	4	192
10.	Mixer	1	350.000	70.000	4	192
11.	Scales	2	135.000	27.000	3	49
12.	Steaming Pan	1	90.000	18.000	3	66
13.	Freezer	1	2.000.000	40.0000	10	438
14.	Other equipment	1	150.000	30.000	3	110
Total			66.940.000			35068

Variable Costs

Variable costs are costs that change in proportion to the resulting change in costs, while their cost per unit remains within a certain relevant limit (Nainggolan et al., 2024)

Table 2 Variable Cost

Type	Amount	Unit Price	Total Price
1. Chicken fillet	6,5kg	40000/Kg	Rp. 260.000
2. Cornstarch	600Gr	5000/250Gr	Rp. 12.000
3. Chicken Feet Bone Flour	200Gr	6500/kg	Rp. 1300
4. Egg	1,3kg	25000/Kg	Rp. 32.500
5. Fresh Milk	552 ML	10000/L	Rp. 5.520
6. Fried Shallots	598 Gr	16000/500gr	Rp. 19.136
7. Fried Garlic	166 Gr	30000/250Gr	Rp. 19.920
8. Sugar	129 Gr	14000/Kg	Rp. 1.806
9. Salt	55 Gr	2500/250Gr	Rp. 550
10. Pepper Poowder	18 Gr	1000/4gr	Rp. 4.500
11. Mushroom Broth	46 Gr	6000/40gr	Rp. 6.900
12. MSG	46 Gr	5000/40Gr	Rp. 5.750
13. Gluten free Bread Flour	5 Pack	38000/Pack	Rp. 190.000
14. Lpg	2	21000	Rp. 42.000
15. Electricity	-	10000	Rp. 10000
16. Water	-	10.000	Rp. 10.000
17. Packaging		49.500	Rp. 49.500
18. Workforce	1	70.000	Rp. 70.000
Total			Rp. 741.382

Total cost= Depreciation of fixed costs/day + Variable costs=

Total cost = Rp. . 35068 + Rp. 741,382= Rp. 776,451

Revenue

Before the receipt is calculated, the product is first determined at its selling price. The determination of selling prices is generally determined through a cost-based pricing approach, namely by calculating the cost per unit. This calculation reflects the total cost incurred to produce a product until it is ready for sale, including raw material costs, direct labor, and production overhead costs.

In this method, the selling price is determined by dividing the total cost by the number of units of the finished product produced. Furthermore, the profit margin is added to the value per unit in accordance with the profit target expected by the producer. Mathematically, the formula used is as follows:

$$BEP(unit) = \frac{\text{Total Cost}}{\text{Total Unit}}$$

$$BEP(unit) = \frac{Rp776.451}{10kg250gr}$$

$$BEP(unit) = \frac{Rp776.451}{40 \text{ Pack}}$$

$$BEP(unit) = Rp. 19,411$$

$$\text{Selling price} = \text{Price/unit} + (\text{desired margin})$$

$$\text{Selling price} = IDR 19,411 + (25\%) = IDR 24,264$$

$$\text{Selling price} = Rp. 24,264 \text{ rounded to } Rp. . 24500$$

After the selling price of a product is determined through *cost-plus pricing* calculation or other pricing methods, the next step is to analyze the potential revenue that can be obtained. In the perspective of managerial accounting, revenue is a function of the selling price per unit multiplied by the sales volume. Mathematically, this relationship can be formulated as follows:

$$\text{Total Receipt} = \text{Selling Price per Unit} \times \text{Number of Units Sold}$$

$$\text{Total Receipt} = Rp. 24.500 \times 40 \text{ Pack}$$

$$\text{Total Receipt} = Rp. . 980.000$$

Keuntungan Profit Formula (Net Profit):

$$\text{Net Profit} = \text{Total Revenue} - \text{Total Expenses (Fixed+Variable)}$$

$$\text{Net Profit} = Rp. . 980,000 - Rp. 776,451$$

$$\text{Net Profit} = Rp. 203,549$$

Break-Even Point (BEP)

BEP is the point where total revenue equals total costs (Maruta, 2018). So that the business does not experience losses or profits. A deep understanding of BEP is crucial for any entrepreneur, as it serves as a business navigation compass that indicates the minimum sales volume that must be achieved to maintain operational survival. This analysis is not only a tool for measuring risk, but also a foundation for strategizing pricing, production planning, and profit forecasting. Without a clear understanding of BEP, a business can get stuck in inefficient operations and struggle to determine the right direction of business development.

Applicatively, BEP can be analyzed through two perspectives: value (price) and volume (units). First, BEP in Price is calculated by dividing the total cost of production by the number of units produced

BEP Formula in Price:

$$BEP(unit) = \frac{\text{Total Cost}}{\text{Total Unit}}$$

$$BEP(unit) = \frac{Rp776.451}{10kg250gr}$$

$$BEP(unit) = \frac{Rp776.451}{40 \text{ Pack}}$$

$$BEP(unit) = Rp. 19,411$$

BEP Price per Unit: Rp. 18,756 per pack, This figure is the minimum price that must be set for each package so that all production costs are covered. The fact that the actual selling price is set at Rp 24,500 gives a very positive signal. This shows that each unit sold not only covers the cost, but also directly contributes a contribution margin of Rp 5,089 per pack, which will be used to cover fixed costs and ultimately form a net profit.

Second, the BEP in the Unit is calculated by dividing the fixed cost of production by the selling price of the units produced

BEP Formula in Units:

$$BEP(Unit) = \frac{\text{Fixed Cost}}{\text{selling Price}}$$

$$BEP(Unit) = Rp. 776.451 - Rp. 24.500$$

$$BEP(Unit) = 30,3 \text{ Rounded up to 31 units}$$

Based on the calculations that resulted in 31 packs, the interpretation is that this business needs to sell at least 31 packs out of a total of 40 packs produced to cover the entire cost. In the operational context, with a production capacity of 40 packs per day, this business has a "margin of safety" or a safety limit of 9 packs. This margin of safety is a vital buffer; He points out that businesses can tolerate a drop in sales of up to 22.5% (9/40 pack) of their full capacity before they start to lose money. The ability to withstand such sales fluctuations is a strong indicator of financial health.

Thus, the overall BEP analysis confirms that this gluten-free chicken nugget business has a healthy cost structure and pricing strategy. Its position that has far exceeded the break-even point, both in terms of selling price and sales volume, not only guarantees profitability but also provides strong resistance to sales fluctuations that may occur in the market. Furthermore, an in-depth understanding of BEP allows entrepreneurs to conduct various simulations, such as evaluating the impact of rising raw material prices or potential sales price declines, so that strategic decisions taken can be based on accurate and reliable data.

Revenue-Cost Ratio (R/C Ratio)

Revenue-Cost Ratio (R/C Ratio) is a fundamental financial analysis tool to assess the profitability and operational efficiency of a business in the short term Revenue-Cost Ratio (R/C Ratio) is used to assess the profitability of a business by comparing total revenue with total costs incurred (Suratiah, 2015). This ratio is similar to the B/C Ratio, but focuses more on the aspect of revenue generated by the business.

Rumus R/C Ratio:

$$R/C = \frac{\text{Revenue}}{\text{Total Cost}}$$

$$R/C = \frac{Rp. 980.000}{Rp. 776.451}$$

$$R/C = 1,26$$

The R/C ratio of 1.26 indicates that every Rp. 1 cost incurred generates an income of Rp. 1.26. This value indicates that the business is in a profitable and efficient condition, because an R/C Ratio greater than 1 is an indicator that the business is financially viable. Therefore, based on this R/C Ratio analysis, it can be concluded that this gluten-free chicken nugget business is not only feasible to run, but also has an efficient and robust operational foundation, which is a major prerequisite for the growth and sustainability of the business in the long term.

Cash flow Estimation

Cash Flow calculation is a fundamental analysis process to record, monitor, and evaluate all cash inflows and outflows in a business during a certain period (Supeno et al., 2025). This process goes far beyond just calculating profits, as it focuses on real cash movements. The goal is to understand the liquidity, financial health, and ability of a company to meet short-term obligations (such as paying suppliers and employee salaries), investing in new assets, or funding day-to-day operations. A business may look profitable in accounting, but if the cash flow is negative (-) where the outflow is greater than the negative inflow (-), then the business can experience serious financial difficulties, and even have the potential to default. In other words, cash flow analysis serves to provide an initial signal regarding its long-term financial vitality and durability.

Table 3 Cash flow Estimation

Year	Quartal	Acceptance	Spending	Cash Flow
1	Q1	Rp. 81.008.250	Rp. 63.974.707	Rp. 17.033.543
1	Q2	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
1	Q3	Rp. 85.508.708	Rp. 67.351.082	Rp. 18.157.626
1	Q4	Rp. 76.507.792	Rp. 60.598.332	Rp. 15.909.460
2	Q1	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
2	Q2	Rp. 85.508.708	Rp. 67.351.082	Rp. 18.157.626
2	Q3	Rp. 81.008.250	Rp. 63.974.707	Rp. 17.033.543
Year	Quartal	Acceptance	Spending	Cash Flow
2	Q4	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
3	Q1	Rp. 85.508.708	Rp. 67.351.082	Rp. 18.157.626
3	Q2	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
3	Q3	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
3	Q4	Rp. 81.008.250	Rp. 63.974.707	Rp. 17.033.543
4	Q1	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
4	Q2	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
4	Q3	Rp. 81.008.250	Rp. 63.974.707	Rp. 17.033.543
4	Q4	Rp. 76.507.792	Rp. 60.598.332	Rp. 15.909.460
5	Q1	Rp. 85.508.708	Rp. 67.351.082	Rp. 18.157.626
5	Q2	Rp. 81.008.250	Rp. 63.974.707	Rp. 17.033.543
5	Q3	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710
5	Q4	Rp. 90.009.167	Rp. 70.727.457	Rp. 19.281.710

Net Present Value

NPV (Net Present Value) is a financial analysis method used to evaluate the profitability of an investment or project by comparing the present value of cash inflows and cash outflows over a period of time (Nugroho & Margana, 2024). At the heart of the NPV concept is the principle of the time value of money—which states that money received today is more valuable than money of the same nominal value received in the future, due to the potential for interest and inflation. Therefore, NPV not only looks at the amount of cash flow, but also when the cash flow is received.

The formula for calculating NPV is:

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+r)^t} - \text{Initial Investment}$$

Information

C_t : Cash Flow in the year

r : Discount rate or interest rate (10% or 0.10)

t : What year (1 to n)

n : Total number of investment years

$$NPV = \sum_{t=1}^{120} \frac{C_t}{(1+0,1)^t} - 66.940.000$$

The results of the NPV calculation in the nugget business can be seen in the table below:

Table 4 NPV calculation

t (Quartal)	CF (Rp.)	Diskonto Faktor (1+0.10) ^t	Value Now
1	Rp. 17.033.543	1,10	Rp. 15.485.039
2	Rp. 19.281.710	1,21	Rp. 15.935.298
3	Rp. 18.157.626	1,33	Rp. 13.642.093
4	Rp. 15.909.460	1,46	Rp. 10.866.375
5	Rp. 19.281.710	1,61	Rp. 11.972.425
6	Rp. 18.157.626	1,77	Rp. 10.249.507
7	Rp. 17.033.543	1,95	Rp. 8.740.901
8	Rp. 19.281.710	2,14	Rp. 8.995.060
9	Rp. 18.157.626	2,36	Rp. 7.700.606
10	Rp. 19.281.710	2,59	Rp. 7.433.934
11	Rp. 19.281.710	2,85	Rp. 6.758.122
12	Rp. 17.033.543	3,14	Rp. 5.427.412
13	Rp. 19.281.710	3,45	Rp. 5.585.225
14	Rp. 19.281.710	3,80	Rp. 5.077.477
15	Rp. 17.033.543	4,18	Rp. 4.077.695
16	Rp. 15.909.460	4,59	Rp. 3.462.362
t (Quartal)	CF (Rp.)	Diskonto Faktor	t (Quartal)
17	Rp. 18.157.626	5,05	Rp. 3.592.390
18	Rp. 17.033.543	5,56	Rp. 3.063.632
19	Rp. 19.281.710	6,12	Rp. 3.152.714
20	Rp. 19.281.710	6,73	Rp. 2.866.103
			Rp. 154.084.368

$$NPV = 154.084.368 - 66.940.000$$

$$NPV = \text{IDR } 87,144,368$$

Based on the results of the financial feasibility analysis, the project showed an NPV value of Rp87,144,368, which means that the business generates present value from cash inflows that exceed the initial investment. Because NPV has a positive value. The positive NPV value clearly indicates that this gluten-free chicken nugget business project is projected to generate real profits that exceed the cost of capital. In other words, after taking into account the value of money time and opportunity costs (represented by the 10% discount rate), this investment still generated a surplus of value of more than Rp 87 million. A project is declared viable and financially viable if and only if its NPV is positive (Gafur, 2016). This significant positive value not only justifies the feasibility of the project, but also indicates that this venture is expected to create value for the owner. Compared to just keeping money in the bank at 10% interest, this investment provides a much higher return. Thus, the decision to accept and run this business idea becomes a rational decision and is supported by a strong quantitative basis, giving confidence that the investment invested will provide superior returns in the future.

Internal Rate Of Return

IRR (Internal Rate of Return) is a discount rate that makes the NPV (Net Present Value) of a project or investment equal to zero (0). In other words, IRR is the expected rate of return from an investment, where cash inflow and cash outflow have an equivalent present value (Sugengriadi et al., 2024).

$$NPV = 0 = \sum_{t=1}^n \frac{C_t}{(1+IRR)^t} - \text{Initial Investment}$$

Information

Ct : Cash Flow in the year
IRR : Discount rate that makes NPV = 0
t : What year (1 to n)
n : Total number of investment years

$$NPV=0=t=120Ct(1+IRR)^t - 66.940.000$$

Since the IRR equation is transcendental, it cannot be solved algebraically directly. Therefore, the commonly used method to determine IRR is the trial and error method (Widhiastuti et al., 2024). This method is done by entering various discount rate (r) values into the NPV formula to see how they affect the NPV results. This process begins by using an initial estimate of the discount rate. If the results of the NPV calculation are still positive, then the discount rate needs to be increased so that the NPV decreases. Conversely, if the NPV is negative, then the discount rate is lowered so that the NPV increases. This process is repeated continuously by adjusting the r-value until an NPV value is obtained that is close to zero. Thus, the discount rate that makes the NPV equal to zero is referred to as IRR. The results of the IRR calculation are as follows:

Table 5. Results of the IRR calculation

t (Quartal)	CF (Rp.)	Diskonto Faktor (1+0,26636900765) ^t	Value Now
1	Rp. 17.033.543	1,27	Rp. 13.450.695
2	Rp. 19.281.710	1,60	Rp. 12.023.336
3	Rp. 18.157.626	1,60	Rp. 8.940.838
4	Rp. 15.909.460	2,57	Rp. 6.186.063
5	Rp. 19.281.710	3,26	Rp. 5.920.306
t (Quartal)	CF (Rp.)	Diskonto Faktor (1+0,26636900765) ^t	Value Now
6	Rp. 18.157.626	4,12	Rp. 4.402.480
7	Rp. 17.033.543	5,22	Rp. 3.261.242
8	Rp. 19.281.710	6,61	Rp. 2.915.166
9	Rp. 18.157.626	8,38	Rp. 2.167.787
10	Rp. 19.281.710	10,61	Rp. 1.817.786
11	Rp. 19.281.710	13,43	Rp. 1.435.432
12	Rp. 17.033.543	17,01	Rp. 1.001.340
13	Rp. 19.281.710	21,54	Rp. 895.080
14	Rp. 19.281.710	27,28	Rp. 706.808
15	Rp. 17.033.543	34,55	Rp. 493.061
16	Rp. 15.909.460	43,75	Rp. 363.656
17	Rp. 18.157.626	55,40	Rp. 327.744
18	Rp. 17.033.543	70,16	Rp. 242.784
19	Rp. 19.281.710	88,85	Rp. 217.020
20	Rp. 19.281.710	1193,46	Rp. 171.372
			Rp. 66.940.000

$$IRR = 66.940.000 - 66.940.000$$

$$IRR = 0$$

After various experiments using the trial and error method, finally a discount level was obtained that produced an NPV close to zero, which was 0.26636900765. This value shows that the investment has an internal rate of return (IRR) of 26.64%. Thus, this business is feasible to run because it is able to provide higher returns than minimum expectations.

Return on Investment (ROI)

Return on Investment (ROI) is a fundamental financial metric used to evaluate the efficiency and profitability of an investment. In simple terms, ROI is used to measure how much the return on investment is compared to the capital invested (Budianto & Dewi, 2023). This ratio is critical for entrepreneurs and investors because it provides a clear picture of how effectively the invested capital is allocated to generate profits

Rumus ROI:

$$ROI = \text{Profit} / \text{initial investment} \times 100$$

$$ROI = \text{Rp}203.549 / \text{Rp}66.940.000 \times 100$$

$$ROI = 0,30\% / 1 \times \text{produksi}$$

ROI of 0.30% By implication, this figure means that for every IDR 1,000,000 invested, it only produces a return of IDR 3,000 in a single production. At this level, ROI is relatively low and can raise questions about the attractiveness of the investment if viewed only from a single operational snapshot. This low figure is mainly due to the large initial investment in long-term assets (such as machinery and equipment), while profits are calculated based on only one day of operation. This highlights that absolute profitability in a single production is not enough to cover the scale of the capital invested, and that the viability of the venture lies precisely in the accumulation of profits from sustainable production.

However, the true picture of this potential business is revealed when analyzed in a long-term perspective. Assuming production runs consistently every day for one year (365 days), the accumulated annual profit can achieve:

$$ROI = \text{Profit/day} \times 365 \text{ Day} / \text{Initial Investment} \times 100$$

$$ROI = \text{Rp}203.549 \times 365 / \text{Rp}66.940.000 \times 100$$

$$ROI = \text{Rp}74.295.490 / \text{Rp}66.940.000 \times 100$$

$$ROI = 111\%$$

If it is assumed that production is carried out every day for one year, then the annual ROI increases significantly to 111%. This shows that in the long run, businesses have a good potential for profitability if production continuity and consistency are maintained. Therefore, this ROI analysis provides two important strategic insights. First, he confirmed that this business model has a very high potential for profitability in the medium term. Second, and most importantly, this analysis confirms that continuity and consistency of production and sales are key to financial success.

Payback Period

Payback period is a method used to calculate the time it takes to return the initial investment from the net cash flow generated by a project or venture (Khoiriyah & Rahman, 2024). This method is popular for its simplicity, both in concept and calculation, so it is often used as an initial benchmark to determine how quickly the invested capital can be returned.

Rumus Payback Period:

The basic formula of the Payback Period is to divide the total initial investment by the projected annual net cash flow. Mathematically, it is formulated as:

$$\text{Payback period} = \text{initial investment} / \text{net annual cash flow}$$

$$\text{Payback period} = \text{Rp. } 66.940.000 / \text{Rp}72.630.406 = 0,95$$

Based on the results of the analysis, the initial investment of IDR 66,940,000 is projected to return within 0.95 years, or around 11.4 months. In simple terms, this means that all the initial capital invested is expected to be fully covered by the net income of the business in less than one year. From a liquidity and risk management perspective, this is a very positive indicator. The shorter the Payback Period of an investment, the faster it becomes "safe" and can be reused for other purposes, such as expansion, operational reserves, or new investments. With a short break-even period, the business's exposure to future uncertainties risks—such as market fluctuations, regulatory changes, or competition—becomes lower and more controlled.

Therefore, based on this Payback Period analysis, the gluten-free chicken nugget processing project based on bone meal is considered very feasible and interesting to run. Its ability to generate a return on investment in a very short period of time, i.e. under one year, not only shows the prospect of quick profits but also reflects operational efficiency and a healthy business model. The speed of this return on capital is a strong strategic consideration, both for business managers who use personal capital and as an attraction if in the future they need funding from external investors.

CONCLUSIONS AND SUGGESTION

CONCLUSIONS

The production of gluten-free chicken nuggets with the addition of bone meal has proven to be financially feasible. This business generated a net profit of IDR 203,549 per cycle from 40 production packs, with a break-even point (BEP) of 31 packs. The NPV value of IDR 87,144,368 and IRR of 26.64% indicate the potential for a high return on investment. The annual ROI reaches 111% and the Payback Period of 0.95 years indicates that this business is efficient, fast payback and has low risk.

SUGGESTION

For the next business analysis, it is recommended to conduct a more in-depth evaluation of fluctuations in raw material prices, labor costs, and production capacity in order to obtain more accurate financial projections. In addition, sensitivity analysis and risk scenarios need to be applied so that business actors can prepare adaptive strategies in dealing with changing market conditions and maintain business profitability stability

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