

## CHAPTER IV

### RESULT AND DISCUSSION

#### 4.1 Product Result

The nutritional value of *Moringa* Chicken Nugget depends on the ingredients. Main ingredients in *Moringa* Chicken Nugget are *Moringa* Leaves and Chicken Thigh. *Moringa* plant is one of the potential plants to be processed from many kinds of vegetables that exist, because there are many benefit in every part of the plant.

#### 4.2 Nutrition Fact

##### 4.2.1 Nutrition Table

The nutritional value of *Moringa* Leaves as follows:

**Table 4. 1** Nutrition Value of fresh *Moringa* Leaves per 100 g

Calorie (cal)	75
Carbohydrate (g)	12.8
Fat (g)	1.7
Protein (g)	9.4
Fiber (g)	0.9

Source: Rasha *et al.*, 2018; Fatma *et al.*, 2018; Abdalfatah *et al.*, 2018

The nutritional value of Chicken Thigh as follows:

**Table 4. 2** Nutritional Value of Chicken Thigh per 100 g

Calorie (cal)	177
Protein (g)	24.85
Fat (g)	8
Carbohydrate (g)	0

Source: Melissa *et al.*, 2022

#### 4.2.2 Nutrition Calculation

**Table 4. 3** Nutritional Value of Ingredients used in the recipe for *Moringa* Chicken Nugget

Ingredients	Calories (cal)	Carbohydrate (g)	Protein (g)	Fat (g)	Sugar (g)	Fiber (g)	Sodium (mg/100g)
<i>Moringa</i> Leaves (200 g)	150	25.6	18.8	3.4		1.8	
Chicken Thigh (200 g)	354		49.7	30.72			812
White Bread (33 g)	88	16.7	2.52	1.09	1.42	0.8	225
Egg (29 g)	43	0.22	3.65	2.88	0.22		41
Spring Onion (20 g)	6	1.47	0.37	0.4	0.47	0.5	3
Mayonnaise (46 g)	108	4.2	0.2	9.9	1.6		372
Mushroom Stock Powder (5 g)	2.42	3	3			3	
Garlic Powder (10 g)	33	7.27	1.68	0.08	2.43	1	3
Salt (2 g)							775

Ice Cubes (10 g)							4
Flour (60 g)	218	45.79	6.2	0.59	0.16	1.6	1
Beaten Egg (60 g)	72	0.7	8	7	0.7		74.4
Bread Crumb (60 g)	237	43.19	8.01	3.18	3.72	2.7	439
<b>TOTAL</b>	<b>1,311.42</b>	<b>148.14</b>	<b>102.13</b>	<b>59.24</b>	<b>10.72</b>	<b>11.4</b>	<b>2,713.4</b>

#### 4.2.3 Nutrition Table

<b>Nutrition Facts</b>	
2 servings per container	
<b>Serving size</b>	<b>5 pieces (75g)</b>
<b>Amount Per Serving</b>	
<b>Calories</b>	<b>330</b>
	% Daily Value*
<b>Total Fat</b> 15g	<b>19%</b>
Saturated Fat 0g	<b>0%</b>
Trans Fat 0g	
<b>Sodium</b> 680mg	<b>30%</b>
<b>Total Carbohydrate</b> 37g	<b>13%</b>
Dietary Fiber 3g	<b>11%</b>
Total Sugars 3g	
Includes 0g Added Sugars	<b>0%</b>
<b>Protein</b> 26g	<b>52%</b>
Not a significant source of cholesterol, vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

**Figure 4. 1** Nutrition Fact of *Moringa* Chicken Nugget

## 4.3 Food Safety and Packaging

### 4.3.1 Processing and Storage Temperature

The components of a *Moringa* Chicken Nugget are arranged in a certain order. Size reduction, shape, and cooking are the three operation units mentioned. Each operation unit has its own goals in mind in order to make the nugget ready to move on to the next phase. The first stage in creating nuggets is grinding, which aims to increase the surface area of the components so that they can be dispersed into particles with a smoother texture. While additional ingredients are being added one at a time to the grinding machine. There is one important ingredient, ice cubes, that can reduce the temperature of the dough due to the heat generated by the grinding machine. Following the stage of steaming, where all the components are combined in a single vessel and heated through.

Steaming process have additional advantages, for example, it preserves the main nutrient, as there is no direct contact with water, the nutritional substances in food are not lost. Second, it retains vitamins and minerals, steaming enhances vitamins such as vitamin B, thiamine, niacin, vitamin C, etc. Additionally, minerals such as potassium, calcium, phosphorous and zinc are retained. As chicken nugget texture is firm, shaping can be done easily using knife. After the steamed nugget has been divided to desirable shape and size, it has to be coated with flour. And the final step is to fry the nuggets. If there are leftovers and can be stored, put *Moringa* Chicken Nugget in the freezer for storage, with minimum temperature 12°C to 4°C, up to for 1 month.

### 4.3.2 Shelf Life

Nugget is categorized as fast food, like hamburgers, pizza, french fries, etc. The process of transferring heat through an oil medium, when the surface temperature may exceed 100°C, is known as frying. When frying, the temperature has an impact on the food's appearance, flavor, ability to absorb fat, ability to be stored, and cost. In general, longer cooking times result in more oil absorption whereas lower temperatures harm meals unintentionally. Erwati (2001; Wahidah, 2019) added that wider surface area of the fried food resulted in more oil absorption.

*Moringa* leaves are included in the group of green vegetables, micronutrients in *Moringa* leaves lost in the steaming process according to the *U.S. Department of Agriculture* (2007; Citra, 2019) namely, iron as much as 5%, and vitamin C as much as 30% of the content on fresh *Moringa* leaves. Since this product is will be sold as a frozen food while the final frying was done at 170°C for 4 minutes or until golden brown.

### 4.3.3 Product Packaging

Food packaging is used for diverse products, and food protection along the supply chain is largely based on the packaging, without packaging, the handling of food products would be costly and inefficient (Brody et al., 2008; Alamri, 2021). Foods may be transported securely across great distances from their point of origin while still being wholesome at the time of consumption due to packing, which maintains the advantages of food processing after the procedure has finished. Food protection must be balanced with

other concerns, such as energy and material costs, growing social and environmental awareness, and stringent rules on pollutants and municipal solid waste disposal.

The selected packaging for *Moringa* Chicken Nugget product is plastic based. The type of plastic that will be used in this packaging is Nylon Plastic, which is a combined two types of material Nylon and Polyethelylene (PE) and it is easy to find through websites or online stores. These two types of plastic are combined to create Nylon Plastic, which has greater strength for a variety of packaging-related uses. Frequently, this substance is referred to simply as a vacuum plastic. Undoubtedly, this vacuum method is used to make food last longer in packaging.



**Figure 4. 2** Nylon Vacuum Plastic

Food packaging serves to identify the product as well as safeguard and preserve the food. The packaging label for the *Moringa* Chicken Nugget includes information, such as, product name, ingredients, nutrition fact table, and contact lists.

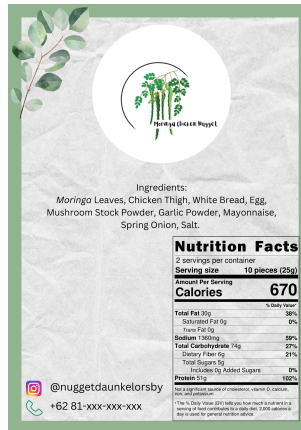


Figure 4. 3 Logo

#### 4.4 Financial Aspects

##### 4.4.1 Product Cost (Variable Cost, Overhead Cost, Fixed Cost)

The total monthly cost is used to compute product costs. Raw material expenses, packaging charges, and utility cost. The quality of raw material is counted 5 recipes per week or 20 recipes per month, which are 10 portions per week or 40 portions per month. Per pack will contains 10 pieces of *Moringa* Chicken Nugget.

##### 1. Start-Up Capital

Table 4. 4 Start-Up Capital

Tools and Equipment	Quantity	Price (/unit)	Sub Total
Chopper	2	Rp 138,000	Rp 276,000

Knives	2	Rp 100,000	Rp 200,000
Cutting Board	2	Rp 50,000	Rp 100,000
Container	5	Rp 30,000	Rp 150,000
Steamer Pot	3	Rp 108,000	Rp 324,000
Frying Pan	1	Rp 177,000	Rp 177,000
Spatula	2	Rp 25,000	Rp 50,000
Tongs	2	Rp 20,000	Rp 40,000
Digital Scale	1	Rp 75,000	Rp 75,000
<b>TOTAL</b>			<b>Rp 1,392,000</b>

## 2. Packaging Cost

**Table 4. 5** Packaging Cost

Packaging	Quantity	Price (/unit)	Sub Total
Vacuum Plastic (12 cm x 20cm)	10	Rp 410	Rp 4,100
Bubble Wrap (25 cm x 50 m)	1	Rp 22,000	Rp 22,000
Box (22cm x 12cm x 10 cm)	10	Rp 890	Rp 8,900
<b>TOTAL (/week)</b>			<b>Rp 35,000</b>
<b>TOTAL (/month)</b>			<b>Rp 140,000</b>

## 3. Utility Cost

**Table 4. 6** Utility Cost

Facility	Quantity	Price (/unit)	Sub Total
Electricity	30 kWh	Rp 1,500 (/kWh)	Rp 45,000
Water	1000L	Rp 2.800 (/m3)	Rp 2,800
<b>TOTAL (/week)</b>			<b>Rp 47,800</b>
<b>TOTAL (/month)</b>			<b>Rp 191,200</b>



#### 4. Raw Material Cost

**Table 4. 7** Raw Material Cost

Raw Materials	Quantity	Price (/unit)	Sub Total
<i>Moringa</i> Leaves	1000 g	Rp 8,000 (/200g)	Rp 40,000
Chicken Thigh	1000 g	Rp 5,190 (/200g)	Rp 51,900
White Bread	165 g	Rp 14,000 (/250g)	Rp 9,240
Egg	145 g	Rp 2,500 (/butir)	Rp 12,500
Spring Onion	100 g	Rp 5,000 (/250g)	Rp 2,000
Mayonnaise	230 g	Rp 5,000 (/100g)	Rp 11,500
Mushroom Stock Powder	25 g	Rp 46,000 (/400g)	Rp 11,500
Garlic Powder	50 g	Rp 14,000 (/130g)	Rp 5,380
Salt	10 g	Rp 2,500 (/250g)	Rp 100
Ice Cubes	50 g	Rp 0	Rp 0
Flour	300 g	Rp 13,500 (/kg)	Rp 4,050
Beaten Egg	300 g	Rp 2,500 (/butir)	Rp 12,500
Bread Crumb	300 g	Rp 8,000 (/200g)	Rp 12,000
<b>TOTAL(/week)</b>			<b>Rp 172,670</b>
<b>TOTAL(/month)</b>			<b>Rp 690,680</b>

#### 5. Total Cost

Variable Cost = Raw Material Cost, Packaging Cost, Utility Cost

Total Cost (/month) = Raw Material Cost + Packaging Cost +

Utility Cost = Rp 690,680 + 140,000 + Rp 191,200

= Rp 1,022,000

#### 4.4.2 Selling Price

$$\text{Product Price} = \frac{\text{Total Cost (/month)}}{\text{Total Product Units (/month)}}$$

$$\begin{aligned} & \text{Rp } 1,022,00 \\ = & \frac{\text{Rp } 1,022,00}{40 \text{ portions}} \\ = & \text{Rp } 25,550 \end{aligned}$$

$$\begin{aligned} \text{Product Selling Price} &= \text{Product Price} + (\text{Product Price} \times \\ & \text{Profit Percentage}) \\ &= \text{Rp } 25,550 + (\text{Rp } 25,550 \times 35\%) \\ &= \text{Rp } 25,550 + \text{Rp } 8,925 \\ &= \text{Rp } 34,475 \approx \text{Rp } 35,00 \end{aligned}$$