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Business Feasibility Analysis of Processed Chicken Feet Products "*Dakbal Bali*"

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ABSTRACT

Chicken feet are a by-product waste from chicken slaughterhouses with very limited utilization. Therefore, a solution is needed in overcoming chicken feet waste into a product with economic value. The utilization of chicken feet can be processed into soup, chicken noodles and chips. Protein content in chicken feet is used as gelatin in addition, chicken feet bones is also processed into flour which contains nutrients, especially calcium. Chicken is processed into products in entrepreneurial activities by one of the students of the Food Science and Technology study program at Warmadewa University. The name of this processed claw product is "*Spicy and Chevy Boneless Chewy*". The *spicy* and *chewy* boneless claw processed product has a name, namely "DAKBAL BALI". The advantages of this product are that consumers are more practical, not messy in consuming feet and the time needed is also shorter and more efficient. The target of selling processed food products per week is 25 packs. The selling time for *spicy* and chewy boneless feet products is Monday-Sunday, which means that in a month sell 100 packets of spicy and chewy boneless feet (20 kg), *spicy* and *chewy* boneless feet. The Break Even Point of this product is 88 packs with a total cost of 1,311,609

INTRODUCTION

Chicken feet are a side waste produced from chicken slaughterhouses with very limited utilization because they contain many bones, little meat, but have a high nutritional content in the skin. According to Susanto, (2019) stated that every year Indonesia is able to produce chicken feet of 1.9 million pairs of pieces or 42.75 thousand tons of chicken feet. This value is calculated based on purebred chicken meat production of 1,500.47 thousand tons multiplied by the conversion of chicken carcass of 1.33 kg per chicken and weight conversion of 45 grams / pair of chicken feet (Susanto, 2019). The volume of chicken feet waste is quite abundant along with the high number of chicken slaughters.

The problem currently faced in increasing community income, especially livestock groups, is the lack of accuracy of farmers in taking advantage of opportunities such as utilizing livestock waste into food that has high economic value. In general, people cannot see opportunities in the development of livestock waste, so technology is needed to increase livestock productivity. The balance between demand and growth in meat production remains unmet.

Chicken legs consist of several parts such as bones, skin, muscles and collagen. Chicken feet have a water content of 65.08%, fat of 3.90%, protein of 20.10%, and ash content of 8.16%. Chicken feet are known to contain 19 amino acids including aspartic acid, glutamine, hydroxyproline, serine, glycine, histidine, arginine, threonine, alanine, proline, tyrosine, valine, methionine, cystine, isoleusin, phenylalanine, tryptophan and 7 lysine (Mhd Sarbon *et al*., 2013). The largest constituent component of chicken feet is collagen, which is as much as 5.64-31.39%. Collagen is the basic ingredient for making gelatin which contains glycine protein by 35%, alanine by 11%, and proline which is quite high.

In general, chicken feet are only used as a mixture of processed light dishes with low added value of the product. People use chicken feet conventionally as a soup mixture and processed into chicken feet crackers. Therefore, a solution is needed in overcoming chicken feet waste so that it becomes a product with various variations that have selling value.

METHODS

1. Data Collection Methods

The data contained in this study was collected and conducted through literature studies, observations, and interviews with sellers of raw materials. The data needed in the research is in the form of production raw materials, production produced, amount of production, and production profits in 1 month.

2. Profit Analysis

The components studied are:

a. Production is the amount of processed cheque products produced in one month.
b. Production costs, namely the amount of costs incurred in producing processed kettles. This variable is measured and calculated in rupiah units, which consists of:
    1. Fixed costs
    2. Variable costs
    3. Total Cost
c. The price is, the selling price of processed cheque products in portions in rupiah.

RESULTS AND DISCUSSION

1. Nutritional Content of Chicken Feet

Chicken feet have the nutritional content presented in table 1. Chicken feet contain greater protein than fat and carbohydrate content, each as much as 19.8 per 100 grams of kettle. (Harianto, 2017). Chicken feet consist of bones and skin that have good nutrient content. Judging from its chemical composition, chicken foot skin contains about 22% crude protein 5.50%, fat 3.5%, ash 64%, and water 3% other substances (Taufik, 2011).

Table 1. Chemical Composition of Chicken Feet

Womb	Rate (%)
Water Content	0.60-62.0 5
Ash content	0.37-5.98
Fat Content	0.04-12.04
Protein Levels	0.73-17.42
Collagen Levels	0.18-9.07
GS Content	12,98 %
CS Content	2,17 %

Source: (Liu, D. C., Lin, Y. K., &; Chen, 2001)

The content of bioactive compounds such as glucosamine and chondroitin can be used to treat arthritis or osteoarthritis (Milala, 2014). In addition, feet also contain nutritional content presented in table 2.

Table 2. Nutrient Composition Per 100 Grams of Chicken Feet

Womb	Rate (%)
Omega 3 Fats	187 mg
Omega 6 Fatty Acids	2,571 mg
Amount of Energy	150 kcal
Vitamin A	100 IU
Olic F acid	86 mg
Choline	13 mg
Calcium	88 mg
Phosphorus	83 mg

Source: www.Nutritiondara.com (2008)

Omega 3 fatty acids are polyunsaturated fatty acids that have many double bonds (De Maria, 2012). Fatty acids are the main structures in cell membrane components (Phospholipids), strengthening the integrity and fluidity of membranes. In addition, some fat is also a precursor of bioactive mediators such as eicosanoids (prostaglandins, leukotrienes, and thromboxane) and steroid hormones (Cholesterol). Irregulates the expression of a wide variety of genes and modulates cell signaling pathways (Apoptosis, inflammation, and cell-mediated immune responses) (Ardi, 2019). However, fat can modulate local, regional, and overarching metabolic processes (Surette, 2008); (Whelan &; Rust, 2006).

Vitamin A or retinol is a poly isoprenoid compound that contains cyclo hexine rings and is one of the fat-soluble vitamins (Fat soluble) and slightly stable to high temperatures. These include retinol (Retinyl alcohol ester of vitamin A, ester of vitamin A), retinal (Aldehyde of vitamin A) and retinoic acid (Vitamin A acid) (Rosmiati H &; Wardhini, 2017). Vitamin A serves to support growth and health, especially necessary for vision, mucus secretion, maintenance of epithelial tissue and reproduction. Vitamin A also regenerates retinal pigment in the process of dark adaptation. In addition, vitamin A also plays a role in the immune system (Rosmiati H &; Wardhini, 2017); (Blaner, 2020).

Folic acid is a synthetic form of folate that is one part of the B vitamin, namely B9. Folic acid (Vitamin B9) is pteroylglutamic acid, the part of pteridine connected via p-aminobenzoic acid to L-glutamate. This vitamin is widely found in plants and in human blood cells as polyglutamate, usually containing three to seven glutamic acid residues linked by gamma peptide bonds (Ilham *et al*., 2018). Folic acid is used to prevent neural tube defects as well as various congenital abnormalities associated with folic acid such as heart defects, urinary tract anomalies, cleft oral facials, and limb defects. Therefore, folic acid supplementation is given to women who are preparing for pregnancy (Douglas Wilson et al., 2015).

Potassium is one of the electrolytes that plays an important role in the body. Potassium is a positively charged ion and is present in cells. Potassium is absorbed in the small intestine and as much as 80-90% of potassium consumed is excreted through urine, the rest is excreted through feces, sweat and gastric juices. Potassium functions in the maintenance of fluid and electrolyte balance, acid-base balance, nerve transmission and muscle relaxation (S Almatsier, 2005). Potassium is obtained from food and drinks consumed, among others: vegetables, fruits and also meat (Shaffer et al., 1992).

Phosphorus is the second most abundant mineral in the body, which is 1% of body weight. Approximately 85% of phosphorus in the body is present as calcium phosphate salts in bones and teeth that cannot dissolve. Phosphorus in bones is in a ratio of 1:2 to calcium. The rest of phosphorus is present in all cells of the body, half of which is in muscles and in the extracellular fluid. As a phospholipid, phosphorus is a structural component of cell walls. As an organic phosphate, phosphorus plays an important role in reactions related to the storage or release of energy in the form of Adenine Triphosphate (ATP) (Sunita Almatsier, 2009).

2. Various Chicken Feet Preparations

Chicken feet are one of the wastes (By product) generated from chicken slaughterhouses (RPA) with a considerable volume of waste. So a solution is needed in dealing with the amount of chicken feet waste which will be more and more. Chicken feet can be processed into food products, one of which is done by (Rahayu *et al*., 2018) making nuggets from chicken feet by utilizing relatively small pieces of meat that are irregular in size and shape then reattached to a larger size assisted by binders. utilizing relatively small pieces of meat that are irregular then reattached to size the larger one is assisted with a binder. This product is observed chemical content consisting of water content, fat content, protein content, ash content and carbohydrate content. The results obtained that the substitution of chicken feet has no real effect because the content of chicken feet is not much different from the content of chicken meat.

The use of chicken feet is mostly processed into soup, chicken noodles, chips and the protein content found in the skin of chicken feet can be used as gelatin. In the food industry, many use gelatin, including products that require the formation of foam (*whipping agent*), usually in the manufacture of ice cream, while in products that need to stabilize the results this gelatin functions as a stabilizer. Some products also require gelatin as a binder as well as an emulsifier and thickener. Therefore, Miwada & Simpen, (2007) utilize foot skin through a modified extraction method so that gelatin products are produced by testing gelatin quality including pH tests, yield, viscosity, fat content tests, and moisture content tests.

Chicken feet bones can also be processed into flour which contains nutrients, especially calcium. This is done by Yusran, (2019) with the hope that chicken feet can be used as an ingredient in making new products, especially in the food sector and many use chicken feet bone meal as a substitute for food products to get the nutritional content in it such as protein and calcium.

This chicken feet are also processed into food products so that they have economic value, carried out in entrepreneurial activities by one of the students of the Food Science and Technology study program at Warmadewa University. Chicken feet is processed by removing the claw bone so that it makes it easier when consuming it. The name of this processed claw product is "Spicy and Chevy Boneless Chewy". The advantages of this product are that consumers are more practical, not messy in consuming feet and the time needed is also shorter and more efficient. Processed boneless feet can be seen in figure 1 and figure 2.

Figure 1. *Crispy* Boneless Feet

Figure 2. *Spicy* Boneless Feet

The *spicy* and *chewy* boneless claw processed product has a name, namely *"DAKBAL BALI*" and there is also a logo where this logo is made in such a way as to make buyers or consumers interested in this product. As for the logo of *Dakbal Bali*, it can be seen in figure 3.

Figure 3. Logo *Dakbal Bali*

3. Profit Analysis

In this paper, the processed claw products that will be calculated for profit analysis are *spicy* and *chewy* boneless feet.

1. Production

In the MBKM Entrepreneurship activity carried out by one of the Warmadewa University students, the target of selling processed food products per week is 25 packs. The selling time for *spicy* and chewy boneless feet products is Monday-Sunday, which means that in a month sell 100 packets of spicy and *chewy* boneless feet (20 kg), *spicy* and *chewy* boneless claw foods. This product is marketed through social media such as WhatsApp and Instagram, along with social media products "*Dakbal Bali"*.

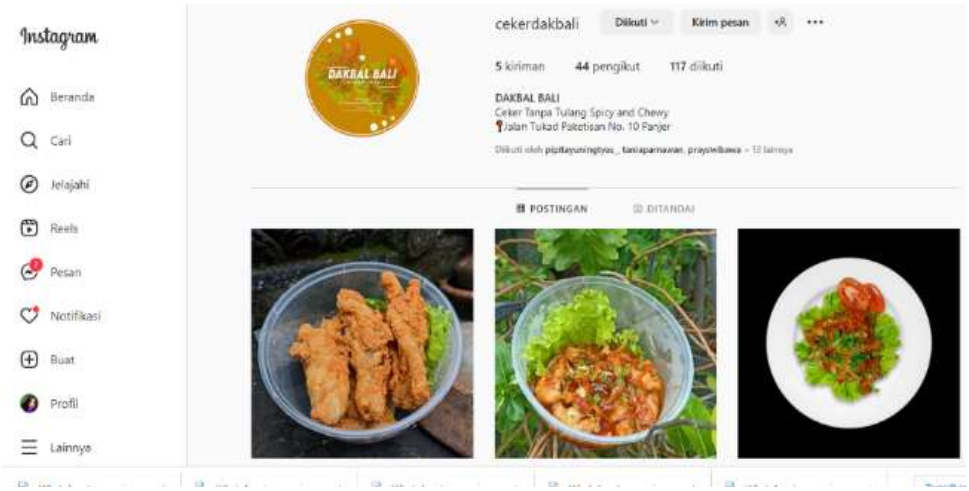

Figure 4. Promotional Media

2. Production Cost

1. Fixed Costs

Table 3. Fixed Cost of Boneless Feet

No	Item	Fixed Active Value (Rp)	Economic Value (years)	Depreciation Value (years)	Depreciation Value (months)
1	Stove and Gas cylinder	300.000	3	100.000	8.333
2	Pot	150.000	2	75.000	6.250
3	Frying pan	150.000	2	75.000	6.250
4	Blender	700.000	3	233.333	19.444
5	Washbasin	60.000	1	60.000	5.000
6	Mixer	30.000	1	30.000	2.500
7	Spatula	40.000	2	20.000	1.666
8	Spoon	84.000	2	42.000	3.500
9	Bowl	48.000	2	24.000	2.000
10	Rag	12.000	1	12.000	1.000
11	Knife	40.000	2	20.000	1.666
Total Depreciation of Fixed Assets					47.609

2. Variable Costs

Table 4. Variable Cost of Boneless Feet

No	Material (month)	Sum		Unit price (Rp)	Amount (Rp)
		Unit	Unit		
1	Chicken feet	2	Kg	40.000	80.000
2	Shallot	¾	Kg	25.000	19.000
3	Garlic	¾	Kg	32.000	24.000
4	cayenne pepper	1	Kg	40.000	40.000
5	Lombok Chili	¾	Kg	30.000	23.000
6	Tomato	½	Kg	10.000	5.000
7	Candlenut	100	Grams	80.000	8.000
8	Coriander	200	Grams	25.000	5.000
9	Bay Leaf	2	tie	2.000	4.000
10	Orange Leaves	2	wrap	2.000	4.000
11	Citronella	2	tie	2.000	4.000
12	Salt	1	wrap	5.000	5.000
13	Sugar	1	Kg	15.000	15.000
14	Mushroom broth	1	wrap	40.000	40.000
15	Flavoring	1	rent	20.000	20.000
16	Sweet Soy Sauce	1	bottle	18.000	18.000
17	Oyster Sauce	1	bottle	25.000	25.000
18	Spicy Sauce	1	bottle	20.000	20.000
19	Cooking oil	2	liter	30.000	60.000
20	Gas 3 kg	2	fruit	30.000	60.000
21	Packaging	100	fruit	2.000	200.000
22	Packaging Labels	100	fruit	350	35.000
Sub Total (Rp)					714.000

Table 5. Other Costs of Boneless Feet

No	Cost name	Unit	Era	Cost
1	Electricity costs	1	Moon	50.000
2	Labor costs	1	Moon	500.000

3. Total Cost

Table 6. Total Cost of Boneless Feet

No	Description	Amount of fees
1	Fixed Costs	
	- Tool Depreciation Cost	47.609
2	Variable Costs	
	- Cost of Raw Materials	714.000
	- Electricity Cost	50.000
	- Labor Cost	500.000
	Total	1.311.609

3. Price

Weekly Revenue:

IDR 15,000 x 25 packs = IDR 375,000

Monthly Income:

IDR 375,000 x 4 weeks = IDR 1,500,000

(IDR 15,000 is taken from the price per pack of *spicy* and *chewy* boneless feet food)**.**

TC = IDR 1,311,609

COGS per serving = IDR 1,311,609 / 100

= IDR 13,116.09

= IDR 13,500

Desired profit = IDR 15,000 – IDR 13,500

= IDR 1,500/pack

Break-even Analysis

$$\text{BEP Production} = \frac{\text{Total Biaya}}{\text{Harga Penjualan}} = \frac{\text{Rp 1.311.609}}{\text{Rp 15.000}}$$

= 87.4 rounded to 88 packs

Meaning BEP will occur when sales reach 88 packs.

CONCLUSION

Chicken feet contain about 22% crude protein 5.50%, fat 3.5%, ash 64%, and water 3% other substances. Chicken feet waste can be processed into products that have economic value such as additives to soup foods, chicken noodles, chips and protein content contained in chicken feet skin can be used as gelatin. In addition, chicken feet can also be processed into flour. Chicken feet consist of bones and skin that have good nutrient content. The target of selling processed food products per week is 25 packs. The selling time for *spicy* and chewy boneless feet products is Monday-Sunday, which means that in a month sell 100 packets of spicy and chewy boneless feet (20 kg), *spicy* and *chewy* boneless feet. The Break Even Point of this product is 88 packs with a total cost of 1,311,609.

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