



## ANALYSIS OF STANDARD ANIMAL PROTEIN PORTIONS AND INGREDIENT COSTS WITH THE SELLING PRICE OF ANIMAL DISHES AT KARAWANG CATERING

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### Abstract

Portion standards and ingredient costs are two important interrelated components in determining the selling price of a dish. This study aims to analyze the relationship between animal protein portion standards and ingredient costs on the selling price of animal-based dishes at Catering K in the Karawang region. This is a quantitative study with a cross-sectional design conducted from May to June 2025. The study population includes all data on portion standards for animal-based side dishes (chicken, eggs, meat, fish, squid, shrimp), ingredient costs, and the selling price of animal-based dishes. Data collection techniques used total sampling with a total of 28 dishes. The results of the study show that portion standards are divided into three sizes, namely I (35–80 g), II (42–100 g), and III (49–120 g), with an average compliance rate of 99.1%. Ingredient costs and selling prices were also divided into three categories according to portion size. The Spearman test results showed a significant relationship between portion standards and the selling price of animal-based dishes, with a p-value of 0.020 ( $p < 0.05$ ). The larger the portion size standard set, the higher the selling price charged. The Spearman test results also showed a significant correlation between ingredient costs and selling prices, with a p-value of 0.000 ( $p < 0.05$ ). The higher the ingredient costs incurred, the higher the selling price set.

**Keywords** : Animal Products, Material Costs, Selling Price, Standard Portion

### Introduction

Food service is the process of preparing food for large groups of people, beginning with menu planning, planning material requirements, budget planning, procurement and purchase of food ingredients, receipt and storage of ingredients, preparation and processing of ingredients, and distribution to consumers (1). Institutional food service is one form of food service conducted on a large or mass scale (2). Based on its nature, food service is divided into two types: commercial and non-commercial (3).

Catering is a type of commercial food service where the food is prepared in a different location from where it is served (4). In 2022, the Central Statistics Agency (BPS) recorded 359 medium to large-scale catering businesses in Indonesia, with 60 catering businesses registered in West Java (5). Data from the Karawang Regional Revenue Agency (Bapenda) shows that in 2022, there were 368 catering businesses in Karawang (6). One of them is Katering K, a category B catering business established in 2014, focusing on serving the needs of industrial workers and collaborating with 11 large companies in Karawang.

Karawang is dominated by the food and beverage industry with 1,003 companies, the automotive industry with 50 companies, the machinery and equipment industry with 39 companies,

the wood and rattan industry with 80 companies, and the leather industry with 94 companies (7). This situation indicates that catering in Karawang has significant potential to support the sustainability of the industrial sector by providing high-quality and nutritious food services, particularly through a diverse range of animal protein-based menus. The provision of diverse animal protein-based menus is crucial for maintaining workers' nutritional status, which contributes to improved health, productivity, and work efficiency (8).

Protein is a chain of amino acids linked by peptide bonds that function as enzyme and hormone builders, blood cells, and antibodies to protect the body from disease and infection (9). Animal protein contains essential amino acids and micronutrients such as vitamin B12, vitamin D, DHA, heme iron, and zinc (10). Insufficient protein intake among workers can lead to reduced work productivity, increasing health risks such as weakened immune systems. Therefore, the implementation of appropriate portion standards is necessary to ensure that workers' daily protein needs are optimally met (11).

Portion standards are one of the standards that must be available in food service activities. Portion standards are defined as the net weight of ingredients or the cooked weight of each type of dish per serving. Research by Andriani et al., (2023) shows that the portion standards applied by Catering X are not fully in line with the recommendations of Ministry of Health Regulation No. 41 of 2014 on Guidelines for Balanced Nutrition, meaning that the portion sizes of the food served do not meet workers' nutritional needs as recommended (12). Furthermore, Dharmawantie's (2021) study found that 61.8% of animal-based side dish portions did not meet the standard portion sizes applied, indicating a high level of inaccuracy in portioning animal-based side dishes (13). The inconsistency in portion sizes not only reduces the nutritional quality received by consumers but also leads to food waste and increased material costs (14).

Food cost is the total cost incurred for procuring food ingredients used in food service operations, including main ingredients and auxiliary ingredients (15). Effective food cost management is crucial in the catering business to control production costs and improve operational efficiency. Accurate food cost calculations can minimize food cost waste, enabling catering companies to set competitive selling prices (16).

The selling price is the amount of money consumers must pay to the seller for the goods or services provided (17). Portion standards and food costs are two interrelated key components in determining the selling price of a dish. Portions that are too large or too small can cause an imbalance in the nutrients consumed by consumers, which can affect their nutritional status (18). Inconsistent portions can also lead to material cost waste, resulting in higher selling prices and reduced consumer purchasing power (14).

This is in line with the research conducted by Hanun et al (2023), Situngkir et al., (2024) and Sari & Ramayanti, (2021), which shows that the more portions served, the greater the amount of ingredients required. The increased need for ingredients will increase material costs, which will then be followed by adjustments to the selling price in order to maintain profits (19). Therefore, setting portion sizes according to standards and using ingredients efficiently are crucial in controlling selling prices to maintain a balance between quality, quantity, and affordability for consumers (20). Based on this background, the objective of this study is to determine the relationship between portion standards and ingredient costs with the selling prices of animal-based dishes at Katering K Karawang.

## Method

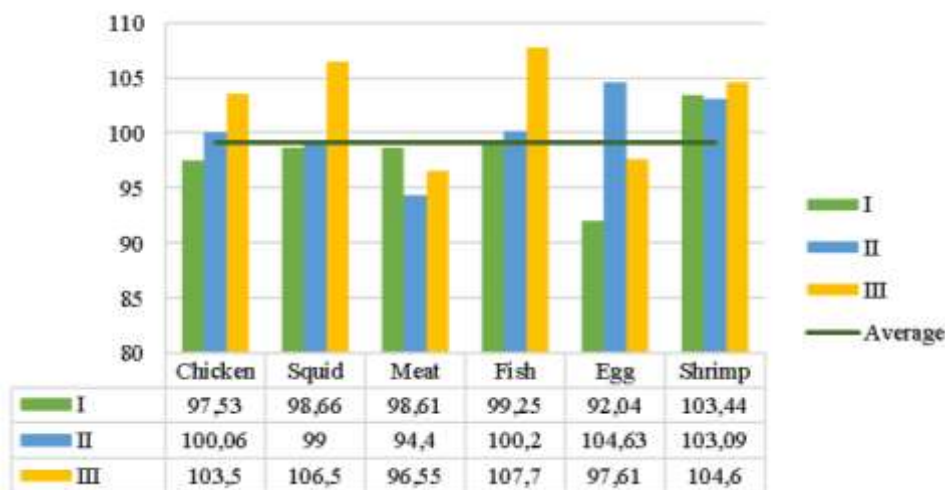
This study is a quantitative cross-sectional study that aims to analyze the relationship between animal protein portion standards and ingredient costs on the selling price of animal dishes. The study was conducted from May to June 2025 at a catering service provider located in Telukjambe Timur, Karawang. The population in this study includes all data related to animal-based side dish portions, which include eggs, chicken, meat, and seafood, as well as information on ingredient costs and selling prices for each animal-based dish. Data collection was conducted using total sampling, with observations of dishes over a one-week period, comprising 28 types of animal-based dishes.

## Results

**Table 1. Standard Animal Protein Serving Size**

Food Ingredients	Weight (g)					
	I	URT	II	URT	III	URT
Chicken	80	1 piece of chicken	100	1 piece of chicken	120	1 piece of chicken
Squid	45	3 medium pieces	60	4 medium pieces of squid	75	5 medium pieces of squid
Meat	35	1 piece of meat	50	2 piece of meat	65	2 piece of meat
Fish	40	1 piece of fish	50	1 piece of fish	60	1 piece of fish
Egg	60	1 piece of egg	100	2 piece of egg	120	2 piece of egg
Shrimp	35	5 medium-sized shrimp	42	6 medium-sized shrimp	49	7 medium-sized shrimp

Based on Table 1, it is known that the standard portion of animal-based side dishes at Catering K. is divided into three sizes, namely I (35-80 grams), II (42-100 grams), and III (49-120 grams).



**Figure 1. Percentage of Animal Dish Fulfillment.**

Figure 1 presents data on the percentage of animal-based dishes exceeding the standard portion size, with an average of 99.1%. The types of animal-based food ingredients analyzed in this study were chicken, squid, meat, fish, eggs, and shrimp. The percentages shown represent the actual portion sizes served compared to the standard portion sizes set by the company.

**Table 2. Cost of Animal-Based Food Ingredients**

Food Ingredients	Material Costs		
	I	II	III
Chicken	Rp 3.000-3.500	Rp 4.000-4.500	Rp 4.600-5.000
Squid	Rp 3.000-3.500	Rp 4.000-4.500	Rp 5.000-5.500
Meat	Rp 3.500-4.000	Rp 4.500-5.000	Rp 5.000-6.000
Fish	Rp 2.500-3.000	Rp 3.100-3.500	Rp 3.600-4.000
Egg	Rp 2.000-2.500	Rp 3.000-3.500	Rp 3.600-4.000
Shrimp	Rp 3.000-3.500	Rp 3.600-4.000	Rp 4.100-4.500

Based on Table 2, it is known that the material costs at Catering K are divided into three categories, namely material costs I (Rp 2,000-4,000), material costs II (Rp 3,000-4,500), and material costs III (Rp 3,600-6,000).

**Tabel 3. Price of Animal-Based Dishes**

Food Ingredients	Price		
	I	II	III
Chicken	Rp 4.500	Rp 5.000	Rp 5.500
Squid	Rp 4.000	Rp 5.000	Rp 6.000
Meat	Rp 4.500	Rp 5.500	Rp 6.500
Fish	Rp 3.000	Rp 3.500	Rp 4.000
Egg	Rp 3.000	Rp 4.000	Rp 4.500
Shrimp	Rp 4.000	Rp 4.500	Rp 5.000

Based on Table 3, it is known that the selling price at Catering K is divided into three categories, namely selling price I (Rp 3,000-4,500), selling price II (Rp 3,500-5,000), and selling price III (Rp 4,000-6,500).

**Table 4. The Relationship Between Standard Animal Protein Portions and the Selling Price of Animal Dishes**

Food Ingredients	Harga jual												Total	p-value	
	S P	I				II				III					
		Amoun t	SP	Amoun t	SP	Amoun t	SP	Amoun t	SP	n	%	n			%
Chicken	80	4.50 0	7 0	8,3 0	10 0	5.00 0	7 0	8,3 0	12 0	5.50 0	7 0	8,3 0	2 1	24,9	<b>0,020</b> *
Squid	45	4.00 0	1 0	1,2 0	60 0	5.00 0	1 0	1,2 0	75 0	6.00 0	1 0	1,2 0	3 0	3,6	
Meat	35	4.50 0	7 0	8,3 0	50 0	5.50 0	7 0	8,3 0	65 0	6.50 0	7 0	8,3 0	2 1	24,9	
Fish	40	3.00 0	4 0	4,7 0	50 0	3.50 0	4 0	4,7 0	60 0	4.00 0	4 0	4,7 0	1 2	14,2 8	
Egg	60	3.00 0	7 0	8,3 0	10 0	4.00 0	7 0	8,3 0	12 0	4.50 0	7 0	8,3 0	2 1	24,9	
Shrimp	35	4.00 0	2 0	2,4 0	42 0	4.50 0	2 0	2,4 0	49 0	5.00 0	2 0	2,4 0	6 0	7,2	
<b>Total</b>												<b>8</b>	<b>100</b>	<b>4</b>	

\*significant  
SP (Standard Portion)

Based on Table 4, it is known that the Spearman statistical test resulted in a p-value of 0.020 ( $p < 0.05$ ) with an average of 73.12. This shows that there is a significant relationship between the standard portion size of animal dishes and the selling price of animal dishes.

**Table 5. Relationship between Ingredient Cost and Dish Selling Price**

Food	Harga jual												Total	p-value	
	Costs 1	I	Amoun t		Costs 2	II	Amoun t		Costs 3	III	Amoun t				
			n	%			n	%			n	%			
Chicken	3.000-3.500	4.500	7	8,3	4.000-4.500	5.000	7	8,3	4.600-5.000	5.500	7	8,3	21	24,9	<b>0,000*</b>
Squid	3.000-3.500	4.000	1	1,2	4.000-4.500	5.000	1	1,2	5.000-5.500	6.000	1	1,2	3	3,6	
Meat	3.500-4.000	4.500	7	8,3	4.500-5.000	5.500	7	8,3	5.000-6.000	6.500	7	8,3	21	24,9	
Fish	2.500-3.000	3.000	4	4,76	3.100-3.500	3.500	4	4,76	3.600-4.000	4.000	4	4,76	12	14,28	
Egg	2.000-2.500	3.000	7	8,3	3.000-3.500	4.000	7	8,3	3.600-4.000	4.500	7	8,3	21	24,9	
Shrimp	3.000-3.500	4.000	2	2,4	3.600-4.000	4.500	2	2,4	4.100-4.500	5.000	2	2,4	6	7,2	
<b>Total</b>												<b>84</b>	<b>100</b>		

\*significant

Based on table 5, it is known that the results of the spearman statistical test obtained a p-value of 0.000 ( $p < 0.05$ ) with an average of 3,876. This shows that there is a significant relationship between the cost of animal dishes and the selling price of animal dishes.

## Discussion

### Standard Portion of Animal Protein

Based on table 1, it is known that the standard portion of animal side dishes at Katering K is divided into three sizes, namely I (35-80 grams), II (42-100 grams) and III (49-120 grams). In size I, the smallest portion standard is meat and shrimp weighing 35 grams, while the largest portion standard is chicken weighing 80 grams. In size II, the smallest portion standard is shrimp weighing 42 grams, while the largest portion standard is chicken and egg weighing 100 grams. In size III, the smallest portion standard is shrimp weighing 49 grams, while the largest portion standard is chicken and eggs weighing 120 grams.

Katering K implemented three portion sizes as a strategy to provide flexibility in catering services to various customer segments. The portion sizes range from 7 to 40 grams, allowing for customization based on each customer's consumption preferences and nutritional needs. The difference in portion size directly affects the selling price of the dish, as the larger the portion, the higher the cost of ingredients, which increases the selling price (3). Therefore, proper portion standards can help in controlling production costs as well as optimally meeting the nutritional intake of customers (20).

Serving standards are the net weight of food ingredients or the cooked weight of each type of dish for one serving (14). Portion standards serve to ensure uniformity of presentation, ensure nutritional adequacy according to individual needs, control production costs, and maintain quality and consumer satisfaction. In its application, portion standards are not only based on the weight of food

ingredients in grams, but also consider Household Measures (URT) such as pieces, grains, or tails which can facilitate menu planning, procurement of raw materials and food preparation and distribution, so that each portion served can be uniform and according to individual nutritional needs (21).

### **Conformity of Portion Standards for Animal Dishes**

Figure 1 presents data on the percentage of compliance of portion sizes of animal dishes with portion standards. The six types of animal food ingredients analyzed in this study were chicken, squid, meat, fish, eggs and shrimp. The percentage shown illustrates the realization of the portion size served which is compared to the portion standard set by the company. The results showed that the percentage of fulfillment of the portion size served was in the range of 90-110% with an average of 99.1% which indicates that the portion size served is in accordance with the portion standards that have been set.

Portion size is defined as the amount of food served in one serving for each individual, which is generally expressed in grams. In organizing food, the size of the portion provided must refer to the portion standards that have been set (22). This is because portion standards are the main reference in determining the amount of food ingredients used, so as to ensure uniformity of presentation, efficient use of materials, and stability of production costs (23).

Based on the results of the study, it was found that the size of portions served to consumers was in accordance with the portion standards set by Katering K with an average percentage of fulfillment of 99.1%. This reflects that the food portioning process has been carried out consistently and controlled, with a high level of accuracy. This portion compliance is due to the practice of procuring ingredients from trusted and quality suppliers, so that the raw materials received are fresh and consistent every day. The company also uses digital scales and calibrated measuring containers to improve accuracy in filling animal food portions. In addition, regular training is provided to employees to understand proper weighing techniques in accordance with portion standards. These efforts contribute to maintaining the consistency of portions served during the production process.

### **Cost of Animal-Based Ingredients**

Based on Table 3, it is known that the cost of ingredients at Catering K is divided into three categories, namely ingredient cost I (Rp 2,000-4,000), ingredient cost II (Rp 3,000-4,500), and ingredient cost III (Rp 3,600-6,000). The main difference between categories I, II, and III lies in the quantity of ingredients used. In category I, eggs are the cheapest ingredient, costing around Rp 2,000 to Rp 2,500, while meat is the most expensive ingredient, costing around Rp 3,500 to Rp 4,000. In the Category II ingredient cost category, eggs are the cheapest ingredient, costing around Rp 3,000 to Rp 3,500, while meat is the most expensive ingredient, costing around Rp 4,500 to Rp 5,000. In the third category of ingredient costs, eggs and fish are the lowest-cost ingredients, ranging from Rp 3,600 to Rp 4,000, while meat is the highest-cost ingredient, ranging from Rp 5,000 to Rp 6,000.

Ingredient costs, or food costs, are all costs incurred for the procurement of food ingredients used in food service, including main ingredients and auxiliary ingredients (15). Food costs are included in the category of variable costs, whose amounts are influenced by the number of menu items, the number of consumers, and the number of food portions produced. Food cost calculations at Catering K are performed by multiplying the quantity of ingredients according to the menu guidelines by the unit price of ingredients per kilogram. Next, all ingredient costs are summed to obtain the total ingredient cost per portion. This method aligns with the guidelines in the Institutional Food Service Manual, which emphasizes the importance of using standardized menus, recipes, and portion sizes as an accurate basis for calculating food costs to effectively control production costs and maintain the quality of food service (24).

Factors that influence ingredient costs include the price and quality of raw materials, portion standardization, inventory management, cooking techniques, operational errors, and market price fluctuations. The price and quality of raw materials are crucial because high-quality ingredients are usually more expensive but can improve the quality of the final product. Portion standardization is important for maintaining consistency and efficiency in material usage. Effective inventory management helps reduce costs, while proper cooking techniques can minimize material waste. Operational errors such as recording mistakes or uncontrolled material expenditures can lead to losses, and market price fluctuations can significantly impact total material costs (25).

Eggs and fish are two types of animal-based food ingredients with the lowest food costs compared to other animal-based ingredients such as meat, chicken, squid, and shrimp. This is mainly due to the relatively lower prices and easier availability of egg and fish raw materials, resulting in lower production costs for menus based on these two ingredients. The affordable prices of these raw materials also make eggs and fish economical choices for catering menus. Conversely, meat has the highest food cost because its raw material prices are much higher than other animal-based ingredients (26).

### **Selling Price of Animal-Based Dishes**

Based on Table 4, it is known that the selling price at Catering K is divided into three categories, namely selling price I (Rp 3,000-4,500), selling price II (Rp 3,500-5,000), and selling price III (Rp 4,000-6,500). The main difference between sales price categories I, II, and III lies in the quantity and type of animal products served. In sales price category I, fish and eggs are the dishes with the lowest sales price at Rp 3,000, while chicken and meat are the dishes with the highest sales price at Rp 4,500. In category II, fish is the dish with the lowest selling price at Rp 3,500, while meat is the dish with the highest selling price at Rp 5,500. In category III, fish is the dish with the lowest selling price at Rp 4,000, while meat is the dish with the highest selling price at Rp 6,500.

Every animal-based dish at Catering K experienced an increase in selling price from category I to III, applicable to six types of ingredients: chicken, squid, meat, fish, eggs, and shrimp. This price increase is consistent, with a difference of between Rp 500 and Rp 1,000 between categories. The larger the portion served, the higher the selling price set, as the use of raw materials also increases. This adjustment in selling prices aims to maintain a balance between production costs and the company's expected profits (27).

The selling price is the price set for consumers, calculated by adding production costs, non-production costs, and expected profit (Utami et al., 2020). Setting the selling price too low can cause the company to incur losses, while setting it too high makes the product difficult to compete in the market due to non-competitive pricing. Therefore, companies must consider various components such as raw material costs, labor costs, operational costs, as well as market conditions and consumer purchasing power in determining the selling price. The right pricing strategy not only maintains business sustainability but can also increase customer satisfaction and expand market reach (28).

### **The Relationship Between Animal Protein Portion Standards and the Selling Price of Animal Dishes**

Based on Table 4, it is known that the results of the Spearman statistical test obtained a p-value of 0.020 ( $p < 0.05$ ) with an average of 73.12. This indicates that there is a significant relationship between animal dish portion standards and the selling price of animal dishes. Portion standards are one of the standards that must be available in food service. Companies can set competitive selling prices if portion standards are properly established, thereby maintaining a balance between production costs, food quality, and targeted profits (29).

Portion standards refer to the net weight of food ingredients or the cooked weight of each type of dish per serving (30). The application of these standards plays an important role in accurately estimating raw material requirements and supporting production process efficiency. Additionally, portion standards serve as a control tool in food filling and serving, and are an important reference in nutrition audits (24). With proper management, companies can control costs and set selling prices that align with the value or quality of products offered to consumers, thereby enhancing competitiveness (12).

The selling price is the amount charged to consumers, calculated by adding non-production costs and expected profit to production costs (27). The setting of selling prices is influenced by internal and external factors (31). External factors include economic conditions (such as inflation and purchasing power), demand elasticity, market type (monopoly, perfect competition, oligopoly), supply-demand conditions, and competitor strategies. Internal factors include portion standards and all production costs, which consist of raw material costs (both primary and auxiliary materials), direct labor costs, and overhead costs such as water, gas, and electricity (24).

The research results show that there is a significant relationship between portion standards and the selling price of animal-based dishes. The larger the portion standard set, the higher the selling price charged. For example, a chicken dish with an 80-gram portion is sold for Rp 4,500, while a 100-gram portion has a selling price of Rp 5,000. This price difference indicates that larger portion sizes require higher raw material costs, directly impacting the selling price. This finding aligns with the research by Andriani et al. (2023), which shows that portion standards are related to selling prices due to the amount of raw materials used (12).

### **Relationship between the Cost of Animal-Based Food Ingredients and the Selling Price of Animal-Based Dishes**

Based on Table 5, it is known that the results of the Spearman statistical test obtained a p-value of 0.000 ( $p < 0.05$ ) with an average of 3.876. This indicates that there is a significant relationship between the cost of animal-based food ingredients and the selling price of animal-based dishes. Material costs are the main component in the production process of a dish, which directly influences the setting of selling prices (32). Companies can set competitive selling prices if material costs are managed efficiently, thereby achieving a balance between product quality and expected profits (16).

Food cost refers to all costs incurred in food preparation, consisting of main ingredients and auxiliary ingredients (15). The magnitude of food cost is influenced by various factors such as ingredient prices and quality, portion standardization, inventory management, cooking methods, operational errors, and market price fluctuations (25). Proper cost control is crucial for maintaining production efficiency and operational stability. Thus, optimal management of material costs will support the company in setting competitive selling prices that align with the target market (12).

The selling price is the amount charged to consumers as compensation for production costs plus non-production costs incurred by the company to achieve profit. Setting the selling price must be done accurately and precisely so that the company can survive in increasingly intense competition. Setting the selling price of a product requires comprehensive consideration of various aspects such as production costs, operational costs, expected profit targets, purchasing power, competitors' selling prices, economic conditions, and so on. Although many factors influence it, material costs remain the primary basis for determining the selling price due to their significant contribution to the total production costs of a product (33).

The research findings indicate a significant relationship between raw material costs and the selling price of animal-based dishes. The higher the raw material costs incurred, the higher the selling price set. As a comparison, the selling price of meat dishes is generally higher than that of egg dishes because the raw material costs for raw meat are more expensive than egg prices in the market. This



finding aligns with the research by Situngkir et al. (2024) and Sari & Ramayanti (2021), who state that the higher the material costs incurred, the higher the selling price set to ensure the company achieves optimal profits (20).

## Conclusion

The results of the study indicate that there is a significant relationship between portion size and the selling price of animal-based dishes, with a p-value of 0.020. The larger the portion size, the higher the selling price. Larger portions require more raw materials, which increases production costs and directly impacts the selling price. The research results also show that there is a significant relationship between raw material costs and selling prices, with a p-value of 0.000. The higher the raw material costs, the higher the selling price set. This is because raw material costs are the main component in calculating production costs, so an increase in raw material costs directly impacts an increase in selling prices.

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